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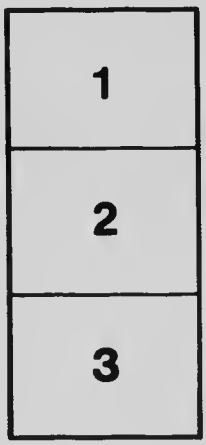

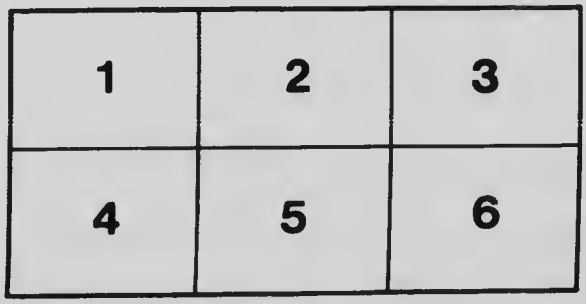

The Rt. Hon.

Sir Wilfrid Laurier P.C., G.C.M.G., LL.D.

These studies - an attempt to discuss the art of discussion - are timidly offered to a master of the art, with the compliments and best wishes of the author.

Edward Bell.

Osgoode Hall,
Toronto,
September 12th
1916.

THE PRINCIPLES OF ARGUMENT

BY
EDWIN BELL, LL.B.

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PREFACE.

"To teach people how to think," says Professor Butcher, "is perhaps the highest end of education, and to learn to think the most difficult thing a man is ever called on to do. A democratic society is inclined to do its thinking by deputy, if only it is permitted to do its voting individually. It is so easy to think in herds through committees and sub-committees and party organizations."

The aim of these studies is to facilitate the processes of thinking which are subservient to argumentation; to enable students readily to detect and expose fallacies; to simplify logical theory, and make it available for practical application in making and attacking arguments. They are designed not only for students in schools and colleges as an educational discipline and a guide for the practice of debate, but also, and especially, for young men who have left school; for law students, lawyers, journalists and others who are daily engaged in the practice of argumentation.

For the purpose of realizing this aim, I have endeavored to show that every argument is an attempt to prove something, and to set forth in a thorough, simple and practical way (1) the nature and requirements of proof, by reference to which it may be determined whether any given argument is valid or not, and (2) a complete classification and analysis of the different kinds of arguments and fallacies illustrated by numerous examples.

Nature and Requirements of Proof.—Some law or principle, whether expressed or not, lies at the foundation of every valid argument, inductive as well as deductive, and proof essentially consists in bringing the proposition to be proved within an accepted law or principle. "We assume the existence," says Mr. Alfred Sidgwick, "of uniformities in nature—natural laws; the narrowing down of these into exactitude being the endless problem of discovery, and the completest knowledge of them already attained at any period being, for that period, the basis of all explanation, prediction, and proof."

Classification of Arguments.—A complete classification of arguments is essential. Two classes of arguments not usually found in treatises on Argument have been included, namely: (1) arguments as to questions of law, as distinguished from arguments as to questions of fact, and (2) arguments to prove the relation of Cause and Effect, as distinguished from arguments from Cause to Effect and from Effect to Cause.

Analysis of Arguments.—Since reasonings as actually expressed are always more or less elliptical, and are based on assumptions which are usually taken for granted, I have endeavored, in analyzing the different kinds of arguments, to bring these assumptions into light, to exhibit the complete structure of arguments and the relations of their parts, and to formulate the principles on which they are based. This is necessary for the right understanding of arguments, especially arguments from Example, from Analogy, and from Circumstantial Evidence, the nature and scope of which are often misconceived and misunderstood.

Deduction and Induction.—Care has been taken to make clear, on the one hand, a real and useful distinction between Deduction and Induction, Deductive and Inductive, as applied to inferences, arguments and modes of proof, and on the other to show that having regard to the requirements of proof, there is no difference whatsoever between them. The way in which the distinction between Deduction and Induction is sometimes set forth is misleading and confusing, and has been a stumbling block to most students of the subject. Thus, for example, it is said that induction is useful in establishing general principles, as if general principles could not be established by deduction; that the value of deduction is that when the premises are accepted the conclusion is clear, as if the same thing were not true of induction; that in deductive reasoning the conclusion is brought under a general law or principle already known, as if the same thing were not true of inductive reasoning, and, indeed, of all arguments whatsoever.

Deduction and Induction are properly used to denote two different methods of discovering and proving general propositions or principles. If the conclusion or proposition to be proved is not a general proposition, the inference or argument cannot usefully be described as either inductive or deductive. In a deductive argument, a general principle is established by two other accepted principles, and in an inductive argument a general principle is established by one other accepted principle, and observed facts or particulars. This distinction, to the invention of which I make no claim, has been generally observed in actual practice by

writers on scientific subjects, but, so far as I am aware, it has not heretofore been definitely stated.

Classification of Fallacies.—The classification of fallacies commonly adopted by logicians has been discarded, and one devised which, it is hoped, will be found simple and comprehensive. Technical names for fallacies, which are never used in discourse, such as undistributed middle, illicit process of the major or minor term, *ignoratio elenchi*, etc., are avoided, and common names adopted which can be readily understood by those who have no acquaintance with formal logic.

Illustrations.—The various kinds of arguments and fallacies have been illustrated by numerous examples, not artificially constructed for the occasion, but taken as far as possible from reasonings that have actually been employed, from newspapers, magazines, law reports, speeches, and other controversial discourse. It will sometimes happen that a given extract may contain an argument that is referable to two or more classes. Thus, an argument from Cause to Effect may be a Deductive argument as well as Conditional and Indirect. An extract, again, may contain one or more arguments or fallacies in addition to the one which the extract is intended to illustrate. The student is recommended to pick out from the passages quoted the various arguments and fallacies which they contain and refer them to classes according to the principles of classification which have been given. The examples quoted are given merely to illustrate the form and structure of arguments, and not for the purpose of recommending them as arguments which

cannot be refuted, nor of affirming the material truth of the assertions or opinions contained in them.

In the two concluding chapters some rules have been given for the effective arrangement of arguments, and some hints on the conduct of debate, based on the practice and precept of the best writers and speakers.

It may be asked of what practical value is a knowledge of logical theory, of the requirements of proof, of the form and structure which all valid arguments assume when expressed in full. It will be urged that argumentation is carried on in practice by throwing out detached hints and fragments, and a large part of the argument is never expressed at all; and yet it is found that, even with such elliptical presentation, the average man, who has never analysed the technical form of arguments, is often able to estimate their weight and bearing, and on occasion to construct and set forth perfectly valid arguments of his own, to prove or disprove a given assertion, or to refute the arguments of others. Would it not be better for the student to depend on his uninstructed common sense in making and attacking arguments, than to burden himself with an elaborate machinery the chief value of which is to test the validity of a given argument?

In answer to this it may be said, first, that the nature and requirements of proof, and the structure of the various kinds of arguments and fallacies, may be stated in a common-sense way, in a form that is simple and easy to comprehend; secondly, this knowledge is like the knowledge of the multiplication table, which is regarded by beginners as sufficiently formidable and elaborate, but when once acquired

it is not considered burdensome; and so it will be found with the principles of argumentation.

The chief advantage of a knowledge of the requirements of proof is to protect against error. It enables the student with quickness and precision to put his finger on the weak spot of an argument, and thereby to expose it; it shows him where to attack, and where to marshall his forces. An advocate may, without this knowledge, be fairly confident of the soundness of his own arguments, but he will be easily confounded, although he is not convinced, by the plausible sophistry of an opponent, for want of readiness in detecting and pointing out the sophistry, and in showing what the fallacy consists in. Moreover, the student will be better able to detect the faults in arguments which he might be tempted to use himself, to forestall an opponent by strengthening or discarding a defective or an unsound argument, and thus avoid the discredit of being refuted.

An advocate who is familiar with the requirements of proof, with the structure of the various kinds of arguments, and the principles on which they are based, the lurking places of fallacies, and the best way to attack and expose them, must have a great advantage over an opponent who is ignorant of these things, and has no guide but his own limited experience.

"No method of reasoning will, of itself, make a good reasoner. A certain amount of natural ability, combined with attentive study, and practical experience and employment of the method, is necessary to enable a person to use it with success. The mere knowledge of a scientific method of reasoning will not lead a person to right conclusions,

more than the mere possession of a chest of tools will make a man a carpenter, than the possession of a musical instrument will make him a musician, or than the possession of a library will make him a scholar. But with equal natural ability, equal study, and equal experience, the man who is provided with a good method will outstrip him who employs a defective or feeble method, or who trusts to mere common sense. If two artisans of equal skill work with tools of unequal goodness; if two manufacturers of equal skill work with machinery of unequal improvement, the result is manifest. So, if military engineers of equal skill are provided with artillery of unequal force, the preponderance cannot be doubtful. No courage or discipline in an army could enable the spear and the arrow to contend with success against the musket and the cannon."[1]

A brief outline of the principles herein set forth is contained in an article which I contributed to the *Encyclopedia Americana* under the title of "Argumentation." That outline is the basis of the present work; some alterations have been made, and a more complete classification and analysis of arguments, and a large number of illustrations have been added. My thanks are due to the publishers of the *Encyclopedia Americana* for permission to make use of that article in this treatise.

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[1] Sir George Cornewall Lewis: *Methods of Observation and Reasoning in Politics*, Vol. I., p. 5.

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CHAPTER I.

INFERENCE AND ARGUMENTATION.

ARGUMENTATION is the process of proving or attempting to prove the truth of a given assertion. Inference is the process of reaching a conclusion from known or admitted facts or propositions called premises. The word inference denotes a carrying forward or drawing on, and the process consists in drawing out explicitly from the premises what they virtually imply. Thus, from the fact that the streets are wet (and other facts presupposed) we infer that it has rained.

The process of arguing, on the other hand, is the reverse of the process of inference; the same process regarded from a different point of view; the same process retraced. The conclusion or fact inferred becomes a thesis to be proved, and the premises from which it was inferred become the reasons by which it is proved or attempted to be proved. Inference is a forward movement from the premises to the conclusion; arguing is a backward movement, or *reference*, from the thesis to the grounds which support it. The process of inference is the operation by which we ourselves reach a conclusion or belief; the process of argumentation is the operation by which we seek to induce belief in others. In one process we give our assent to a conclusion; in the other we ask assent for it. Inference is the business of the investigator, argument is the business of the advocate. In

beginning an investigation, we do not know at what conclusion we shall arrive; in beginning an argument, a conclusion which has been already reached is set up as a thesis to be proved or disproved. Thus, when a coroner or a detective investigates the cause of death in any particular case, he first ascertains all the relevant facts, and then from them he draws a conclusion that death was caused in such and such a way, or by such and such a person. At the trial of a prisoner, the advocate who prosecutes begins with the conclusion formerly arrived at, that the prisoner is guilty, and seeks to prove it by the facts from which it was inferred.

The real nature of the processes of inference and of argument is often obscured from the fact that in ordinary discourse, whether written or spoken, a part of the inference or of the argument is usually omitted, and our mental operations are so rapid that we are seldom conscious of the implied assumptions upon which our reasonings are founded and which are necessary to give them validity. Thus, from the fact that the streets are wet we infer that it has rained, and conversely, we argue that it has rained because the streets are wet, leaving out of view the presuppositions which in each case is the foundation, the fulcrum, so to speak, of the process. The mind runs ahead of complete argumentation and our reasonings are always in practice more or less elliptical.

The word Inference, it is well to remind the student, is used in several senses, usually distinguished by the context. In one sense it means the process of inferring or reaching a conclusion from premises. In another sense it denotes the fact inferred or the conclusion reached. In a third

sense it signifies the premises and the conclusion deduced from them.

The word Argument is also used in several senses which it is necessary to distinguish. In one sense it means the process of arguing or argumentation. In another sense it denotes the means by which a thesis is supported, that is, one of the reasons or grounds. Again, the whole of an argumentative speech or address is frequently called an argument. But strictly speaking, an argument consists of the thesis and the grounds by which it is supported. It is in this last sense that the word will here be used unless otherwise indicated by the context.

Argumentation includes also the processes of disproof and of refutation; which, however, are fundamentally processes of proof, since disproof consists in proving that a given thesis is false, and refutation consists in proving that a thesis for which reasons have been given is not proved by them, having regard to the requirements of proof. To disprove and to refute are often used in the same sense, that is, of showing an argument to be fallacious, but it will be convenient to use disproof as meaning the process of proving a thesis to be false, and refutation, the process of proving an argument to be false.

In every argument, proof invites belief in the truth of the thesis, disproof invites disbelief, and refutation, doubt or non-belief. Proof seeks the answer "Yes" to the question; disproof, the answer, "No"; refutation, the answer "I am not convinced." Proof asks a verdict of guilty; disproof, a verdict of not guilty, and refutation, the Scotch verdict of not proven.

Argumentation is mainly concerned with propositions that are unknown, doubtful or disputed, with questions at issue between two or more persons. When there is no dispute or doubt it is sufficient to assert, and argument is unnecessary. Some propositions are self-evident and do not require proof; others, while admitting of proof, form a body of well-established truths which everybody accepts. It is chiefly with propositions that are seeking acceptance for the first time, that have not yet been sifted or examined, upon the truth or falsity of which important interests depend, or which some one has a strong motive for disbelieving or disputing, that a question arises for argumentation. Thus, in deliberative speaking, a certain policy or course of action is proposed by one man or set of men as expedient or advantageous. This is denied by others and hence a debate. In a criminal trial the prosecutor asserts that the prisoner is guilty; the prisoner denies. Here we have a disputed proposition, or an issue, which alone can form the subject of an argument.

The immediate purpose of argumentation is to affect belief, either to confirm, modify or destroy an existing belief, or to give rise to a new belief where those addressed have formed no opinion, or are in doubt as to what opinion to form. The ultimate purpose of arguing is usually through beliefs to influence action. Arguments are addressed to one or more persons in the position of arbiters—a judge, a bench of judges, a jury, a deliberative assembly, a congregation, or an audience,—whose decision, verdict, votes or conduct is sought to be affected as a consequence of belief.

While the object of proving a proposition is to induce

those addressed to believe in its truth, it must be borne in mind that proof is only one of the many causes of belief. Custom, education, interest, authority, feeling, in short, "psychological climates," as well as proof, and even more than proof, are concerned in the making of beliefs. On the other hand, belief does not always follow proof; if the mind is affected by feeling or prejudice, the most complete proof often fails to produce belief.

Argumentation is to be distinguished from Exposition, Excitation and Persuasion. In Exposition the subject-matter is always something denoted by a name or a term, and the aim is to set it forth so that it may be understood. In Argumentation the subject-matter is always a proposition, which expresses a relation between two terms, and the object is to establish its truth so that it shall be believed to be true. Both processes are addressed to the intellect; but Exposition is mainly addressed to the conceptive faculty of the mind, and aims to induce the formation of ideas, while Argumentation is mainly addressed to the reasoning faculty, and aims to induce the formation of beliefs. Exposition, however, is always the basis, and often much of the body of argumentation. Thus, to set out the proposition to be proved, to define the terms, to explain the question and detach it from extraneous and irrelevant matter, and to set forth the facts and principles that constitute the proof, involve exposition. The process is expository in so far as it is directed to making the issue and the proof intelligible; it is argumentative in so far as it invites belief in the proposition to be proved on the reasons given. The unit of the process of Exposition is a proposition which *asserts* a

relation between two terms; the unit of the process of Argumentation is an argument, which consists, when fully expressed, of three propositions, the object of which is to *establish* a relation between two terms.

Excitation is the process of influencing the feelings. Persuasion is the process of influencing the will of those addressed by inclining them to a definite purpose or action. Persuasion is applicable to both belief and action. In a wide sense it includes the process of inducing the mind to believe by arguments. In a narrower sense it is the process of moving the will to act by presenting a motive. Persuasion is closely connected with Excitation and Argumentation; it holds of Excitation in so far as action depends on feeling; it holds of Argumentation in so far as action depends on beliefs. Persuasion and Argumentation are often confused since we use the word "reason" as meaning a ground of belief and a motive for action. The word "because" also is used to introduce a reason, whether as a ground of believing something or as a motive for doing something. Thus, we believe that it will rain because the sky is overcast; we seek shelter because we wish to escape the rain.

The aim of Exposition is to induce the formation of a new idea; of Argumentation, a new belief; of Excitation, a new feeling; of Persuasion, a new purpose.

Argumentation may be defined to be the process of proving or attempting to prove the truth or falsity of a proposition that is unknown, doubtful or disputed, by means of, and by reference to, facts and principles that are known or admitted by those sought to be convinced or established to

their satisfaction, and which involve or imply the truth of the proposition in question, or of showing or attempting to show that a given proposition has not been proved by reference to the requirements of proof, with the object of influencing belief, and usually through belief to influence action.

CHAPTER II.

PROOF.

1. *Meaning of Proof.*

To prove a proposition means to establish its truth on a firm basis. Originally to prove meant simply to test,—to test the quality of anything, whatever might be the result of the testing,—a sense it still retains in some expressions, as in "prove all things, hold fast that which is good." As generally used the word now means to verify or establish by means of a test, and it is employed in two somewhat different senses. In one sense it means to verify or establish by observation or trial. Thus, a prediction is said to be proved if it be observed that the event predicted actually happens. The strength of a timber or the loyalty of a person is said to be proved if it has been tried or tested and found to stand the test. In the other sense, (that in which it is used in argumentation) to prove a proposition means to establish its truth, not by observation, but by reference to facts and principles which are known, established or admitted to be true, and which imply, or from which may properly be inferred, the truth of the proposition in question. Thus, the proposition, "there will be an eclipse of the sun next month," may be proved or disproved before the event by reference to the known position and movements of the heavenly bodies concerned and the laws of their motion. Proof in this sense is confined to the establishment of general proposition and

of facts and events that are remote in time or place, the past, the absent or the future which cannot be brought to the test of observation. Proof, in other words, is the indirect establishment of a relation between two things, in contrast to perception in which the relation is established directly. "When the phenomenon," says Mill, "is within the range of present observation, by present observation we assure ourselves of its existence; when it is beyond that range and is therefore said to be absent, we infer its existence from marks or evidences."

The word "proof," like the words "prove," "inference" and "argument" is used in different senses which should be distinguished. It may mean according to the context, (1) the process of establishing; (2) the means of establishing, a proof or the proofs being equivalent to the reasons; or (3) the result of the process, that is, establishment, the quality or state of being established. Proof also means, when used as an adjective, impervious or impenetrable, as when we speak of a material being water-proof or bullet-proof, or of a person being proof against arguments or ideas.

The process of proof is to be distinguished from the process of inference and of argumentation. In inference, the conclusion may be little more than a conjecture or a guess; in argumentation, a reason given to support a thesis may afford but slight probability of its truth. Thus, from a slight clue, a scar on a man's hand or a button off his coat, a detective might infer or argue that such a person committed a crime, but this conclusion might turn out to be false. To infer is to draw a conclusion, whether true or false. To argue is to assign reasons whether sufficient or not; but to prove is to assign reasons sufficient to establish.

It might be thought, since the object of argumentation is to convince, that conviction is the criterion of proof. Indeed, a thesis is often said to be proved if those addressed, as for example, a jury, are convinced of its truth. But conviction is not the test, since, on the one hand conviction often results from unsound arguments, and on the other, the most complete proof often fails to produce conviction. What, then, are the requirements of proof? What is the test by which we may know that a thesis for which reasons have been given is established by them?

2. *Requirements of Proof.*

Proof requires that the thesis be brought within the scope of an established law or principle. "Just as explanation," says Mr. Alfred Sidgwick, "always demands a reference to some wider generality than that which is to be explained, so proof always demands a reference to some wider generality than that which is to be proved." A thesis may be brought within the scope of a principle by means of a third proposition, which may be either, (1) a statement of evidence, or (2) another principle.

The following are examples:

Thesis: This prisoner is guilty of perjury.

Evidence: Because, being a witness in a judicial proceeding, he made a statement under oath which he knew to be false.

Principle: Every person who, being a witness in a judicial proceeding, makes a statement under oath which he knows to be false is guilty of perjury.

Thesis: Division of labor increases the efficiency of labor.

Principle: Because division of labor increases the dexterity of the workman.

Principle: Whatever increases the dexerity of the workman increases the efficiency of labor.

Every valid argument, then, when fully expressed, consists of a proposition to be proved which may be called the Thesis, and two proving propositions usually called the reasons or the proof, one of which is an established principle and the other is a mediating proposition consisting of a statement of evidence or of another principle, and may be called for distinction the Reason, as in ordinary argumentation it is the only one of the reasons expressed. A thesis is said to be proved: (1) if the Reason and the Principle are known, established or admitted to be true, and (2) if the thesis is contained, involved or implied in them. Three propositions which are related in this manner constitute an argument proper, although as previously explained, the word is popularly applied to any fact or proposition advanced to support a given thesis.

An argument may be compared to a lever, the Thesis corresponding to the weight to be lifted, the Reason to the power, and the Principle to the fulcrum.

This account of the requirements of proof is not always apparent because in practice arguments are seldom expressed in full. Argumentative discourse, whether written or spoken, is always more or less elliptical. The advocate relies to a large extent on the experience and intelligence of those to whom his arguments are addressed, and he is often content to suggest his meaning in statements more or less frag-

mentary and incomplete, and leave it to them to supply the assumptions on which his reasonings are founded and which are required to give them validity. The facts which constitute the Reason are seldom fully stated, and the Principle relied on is usually taken for granted and omitted altogether; but it will be found on examination that every valid argument may be expressed in this form by stating expressly what in practice is usually presupposed and omitted.

In treatises on Logic, an argument when expressed in full is said to be a syllogism which consists of three propositions, the major premise, the minor premise, and the conclusion, corresponding to what we have called the Principle, the Reason and the Thesis, so related that the truth of the conclusion is implied in the truth of the two premises. "To a legitimate syllogism," says Mill, "it is essential that there should be three and no more than three, propositions, namely, the conclusion or proposition to be proved, and two other propositions which together prove it and which are called the premises." This mode of expression, however, is more applicable to inferences than to arguments.

The first requirement of proof has reference to those sought to be convinced. The advocate must found his thesis on something which *they* recognize to be true, and consequently the reason and the principle relied on must be known to them, or established to their satisfaction. If the reason or the principle be not accepted, if either be disputed, the proof remains incomplete until the disputed proposition, which then becomes a new thesis, is itself proved by reference to another reason and principle, and so on until some holding

ground is reached, some reason and principle that will be unchallenged. When either the reason or the principle of an argument is proved by reference to another reason and principle, the two or more arguments thus connected are called a chain argument, or a train of reasoning. This process, however, of successively proving the reasons and principles of an argument is necessarily limited, otherwise it might take infinite time and an infinite number of arguments to prove any given thesis. In every train of reasoning we arrive by more or fewer steps at some principle which those addressed are either willing or bound to accept, and which it is unnecessary to prove. Thus, it is not necessary to prove the principles that things which are equal to the same thing are equal to one another, or that every event has a cause, or that like causes produce like effects, since everybody acts on these principles and is willing to accept them without proof. Although argumentation is concerned with disputed propositions, it cannot be carried on without some agreement, some common ground, some truth or principle which both sides, or at least those sought to be convinced, admit to be true. This starting point is found not only in such principles as have been mentioned which all men really accept, and which no one who is anxious to arrive at truth denies, but also in the vast body of principles which form the common knowledge of mankind. Although nothing can be proved if nothing be admitted, no practical difficulty is ever felt, since all men agree somewhere, or in some things. The Christian and the Mohammedan, the Catholic and the Protestant, the Democrat and the Republican, the plaintiff and the defendant, however much they differ, have some

points of agreement. "Some part of the way," says Mr. Sidgwick, "our opponents go with us and then branch off. Argument begins at the parting of the ways."

The second requirement of proof is concerned with the relation of the thesis to the reasons. The test is, Is the thesis implied or contained in the reasons? A considerable part of formal logic is taken up with rules designed to enable the student to answer this question in any given case. But while a study of these rules affords a useful mental discipline, the difficulty of readily applying them renders them of little practical value. As a matter of practice they are seldom referred to in actual argumentation, and fortunately they are seldom necessary. If the argument is expressed in full, or if what is not expressed may be readily supplied, the question whether or not the reasons imply the thesis is usually manifest on simple inspection.

There is a widespread popular notion that the requirements of proof as above set forth, apply only to that class of arguments commonly called deductive. The distinction between deductive and inductive arguments will be fully discussed in a subsequent chapter, but it may be well to state here that the requirements of proof are universal, and as pointed out by Whately, apply to all arguments whatsoever, inductive as well as deductive.

3. *Subject-Matter of Proof.*

The subject-matter of proof is always a proposition.

For purposes of argumentation it will be useful to distinguish the following classes of propositions:

Propositions are either simple or complex. In a simple

proposition there is but one main subject and one main predicate, as, Fire burns. A proposition may be simple although the subject or the predicate is qualified by an adjective, demonstrative pronoun, adverb, relative clause or otherwise, as, This fire burns brightly. In a complex proposition there are two or more main subjects, or two or more main predicates, or both; as, Mars, Jupiter and Saturn revolve around the sun; The subject who is truly loyal to the chief magistrate will neither advise nor submit to arbitrary measures; Action and reaction are equal and opposite.

Propositions are either conditional or unconditional. In a conditional proposition, the truth of an assertion is expressed to depend on a condition. Conditional propositions are usually distinguished as either hypothetical or disjunctive, as for example:

Hypothetical: If it continues to rain the crops will be destroyed.

Disjunctive: Either will acts on matter or it does not; The cause of a given effect is either A, or B, or C, or D; A given line, area or quantity is either equal to another line, area or quantity, or it is greater, or it is less.

A hypothetical proposition is made up of two propositions, called antecedent and consequent, so related that the truth of the consequent follows necessarily from the truth of the antecedent. In other words, a hypothetical proposition asserts, not that the antecedent or the consequent is true, but that the consequent may be properly inferred from the antecedent. "When we say, 'If the Koran comes from God Mohammed is the prophet of God,' we do not intend to affirm either that the Koran does come from God, or that

Mohammed is really His prophet. Neither of these simple propositions may be true, and yet the truth of the hypothetical proposition may be indisputable. What is asserted is not the truth of either of the propositions, but the inferribility of the one from the other."[1]

What is meant and implied in a hypothetical proposition is expressed in what is known as the law of antecedent and consequent: When two propositions are related as antecedent and consequent, the truth of the consequent follows from the truth of the antecedent, and the falsehood of the antecedent follows from the falsehood of the consequent.

A disjunctive proposition is made up of two or more propositions which are declared to be mutually incompatible, that is, if one is true the other or others must be false.

Propositions, finally, are either general or particular. General propositions may be divided into two classes, namely, (1) definite or universal, and (2) indefinite.

A general proposition is definite or universal when the predicate is affirmed or denied of everything of which the subject is a name, or when the relation is expressed or is intended to be understood as applying to all cases of a specific description. For example: All men are created free and equal; Every person who, being a witness in a judicial proceeding, makes a statement under oath which he knows to be false is guilty of perjury; Arsenic is a poison; Unsupported bodies fall to the ground; If equals be added to equals the sums are equal; No animal life can be sustained without food. Qualifying expressions which are distributive,

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1. Mill: *System of Logic*, p. 70.

inclusive or conditional, such as all, every, in all cases, in every instance, at all times, whatever, whenever, always, if, no, never, are used to indicate definite general or universal propositions.

Indefinite general propositions are not expressed, or at least are not intended to be understood as true universally, but only as a rule, generally, or in most cases. Thus, the propositions, Contact excites sensation, Education increases the efficiency of labor, Evil communications corrupt good manners, are not intended to be understood as true in all cases, but only in most cases. They may be given a universal meaning by expressing the relation as a tendency, as, Education tends to increase the efficiency of labor. The following are further examples: Slave labor is given reluctantly, is unskilful and is wanting in versatility; As civilization advances poetry generally declines; Stratified formations usually contain fossils; Men who have gifts of statemanship have as a rule no faculty for accumulating wealth.

It is sometimes difficult to determine without the context whether a proposition is intended to be understood as universal or not. Many propositions that are intended to be understood as universal are indefinitely expressed. For example, "the air has weight" means that every portion and particle of air has weight; "food is necessary to animal life" means, not that all food, or every kind of food, but that food of some kind is in *all* cases necessary to animal life.

Particular propositions are either definite or indefinite. A particular proposition is definite if the subject is a singular name, or if the intended relation is qualified by numbers or

other restrictive words, such as, the, this, that, these, those, here, now, at this time. The following are examples: Washington was the first president; This prisoner is guilty; Four men were killed; The time is now ripe for tariff revision; The Philippines should be given their independence.

Indefinite particular propositions are indicated by such words as, some, few, sometimes, in some cases, often. The following are examples: Some diseases are incurable; A few of the metals are incorrosible; The cost of production sometimes diminishes as the supply increases; Many of the most important speculations of economic science depend upon the tendency of the products of agriculture to become more expensive.

It will be noticed that these classes are cross-divisions and are each complete and exhaustive of all propositions. Thus, every proposition is either simple or complex, and it is also either conditional or unconditional, as well as either general or particular.

Although any proposition may be set up as a thesis to be proved or disproved, in practice the main thesis is commonly a definite particular proposition. In judicial trials the final issue may almost always be so stated, as for example: This prisoner is guilty of theft; The plaintiff is entitled to recover damages from the defendant.

In deliberative argument the question is usually some particular matter of fact or policy, as for example, The adoption or continuance of a protective tariff will be in the best interests of this country.

But in many cases the principle required to establish the main thesis may have to be proved, and so on until some

principle is reached that will be accepted without proof. In this way the proof of any particular proposition may involve the proof of one or more general propositions.

In all but simple cases the principle or the reason on which the thesis depends, or several principles and reasons have to be established. Thus, in Henry Clay's speech on the American System of Protection, the main thesis was that the policy of protection was in the best interests of the country, but in order to establish that, he argued the truth of the principle, among others, that the price of protected manufactures tends to decline.

Sometimes the subject of debate is a general or abstract question, as for example:

The end justifies the means;
Competitive examinations should be abolished;
Hospitals should be maintained by the state;
Capital punishment should be abolished;
The state should provide for an eight-hour working day;
Saloons should be abolished;
The state should provide old age pensions.

Although the subject-matter of debate is usually stated in the form of a proposition or resolution, and to be debatable it must be capable of being stated in that form, yet it is often stated in the form of a question. The following are examples:

Are modern Christian missions a failure?
Is physiology an experimental science?
Are private monoplies public evils?
Should the tariff be revised?
Should all patents be abolished?

Is profit-sharing the cure for labor troubles?

Should religion be taught in our public schools?

Is the pulpit losing its power?

Should the referendum be introduced into the American system of government?

Is church union practicable?

Is telling an untruth ever justifiable?

Should theological difficulties be freely discussed?

Are trade unions mischievous or beneficial?

Should vaccination be compulsory?

Should the franchise be extended to women?

Can an artificial language like Esperanto be made universal?

Is vegetarianism beneficial?

Should an export duty be placed on pulp-wood?

Is lynch law ever justifiable?

Did Bacon write the works attributed to Shakespeare?

4. *The Means of Proof.*

The proving propositions of an argument are usually called the reasons or the proof. The word "Reason" is employed in two senses which are usually distinguished by the context, namely, as a motive for action and as a ground of belief. Thus, the answers to the questions why anything is done and why anything is believed are both called reasons, and may be introduced by the word "because" although in one case it may be the statement of a purpose, and in the other a statement of evidence.

The word reason, again is commonly used to signify

either of the two proving propositions in an argument, but, as before stated, we have elected to confine the name, unless otherwise indicated by the context, to that one which brings the thesis within the principle, the mediating proposition, or as it is technically called, the minor premise, of an argument.

Having regard to its form, the Reason or mediating proposition may be either a particular or a general proposition according as it is the statement of evidence or of a principle. The Principle of an argument must always be a general proposition, but it may be either affirmative or negative, simple or complex, conditional or unconditional. Having regard to their subject-matter the proving propositions may therefore be regarded as evidence or principles.

(a) *Evidence.*

Evidence originally meant the state of being evident or plain, but by a natural transition it has come to mean that which tends to render evident or plain. Evidence, thus understood, includes every matter of fact which, in the light of an accepted principle, tends to produce in the mind a belief in the truth or falsity of some other alleged or disputed fact or principle. Evidence is something which laid before the mind tends to induce belief in something else, and therefore it might be used in a wide sense to include principles which have that effect as well as facts; but there is a decided tendency to restrict evidence to mean a fact or a set of facts which have certain relations to other facts or to principles. By a fact is meant a really existing relation between two things which may be expressed as an assertion either affirma-

tive or negative. It is sometimes used, however, to mean merely a relation asserted between two things, as when we speak of the *factum probandum*, or fact to be proved.

A fact may be considered in isolation, by and for itself, separated from all other circumstances, or it may be regarded as having relations to other facts. When a fact is looked at as implying some other fact, it becomes evidence of that other fact. Thus, the fact that the streets are wet is evidence that it has rained; a rapid pulse is evidence of fever; the fact that water is boiling is evidence of a high temperature. The fact to be proved is usually called the "principal" fact, and the proving fact, the "evidentiary" fact.

Every fact that is evidence has two relations, (1) to a principle by means of which alone it can become evidence, and (2) to the fact or principle to be proved, of which it is said to be evidence. Unless a fact adduced as evidence has this backward and forward reference it is said to be irrevelant. Thus if it were sought to prove that a person is guilty of perjury, the fact that he is a thief is irrevelant as it does not bring him within the law affecting perjury. The fact that men have uniformly died in the past is evidence that men now living will die, only in the light of some such principle as "what uniformly happens in the past will continue to happen in the future."

Evidence may be divided according to its source into two main classes, namely, Personal and Real. Personal evidence includes the testimony of witnesses. Real evidence comprises all other observed facts, including what is called circumstantial evidence.

"Where knowledge," says Starkie, "cannot be acquired

by means of actual observation, there are but two modes by which the existence of a fact can be ascertained: 1st, by information derived either immediately or mediately from these who had actual knowledge; or 2ndly, by means of inferences or conclusions drawn from other facts connected with the principal fact which can be sufficiently established. In the first case, the inference is founded on a principle of faith in human veracity sanctioned by experience. In the second, the conclusion is one derived by the aids of experience and reason from the connection between the facts which are known and that which is unknown. In each case the inference is made by virtue of previous experience of the connection between the known and the disputed facts."

Evidence may also be divided, according to the relation which the facts constituting the evidence bear to the proposition to be proved, into evidence of Example, of Analogy, of Cause and Effect, of Association, of Equality, etc.

Real evidence is sometimes called circumstantial evidence. But circumstantial evidence, strictly speaking, comprises only those facts which may be referred to the principle of the Argument from Circumstantial Evidence, which will be fully discussed in a subsequent chapter.

Evidence should be distinguished from proof and argument with which it is often confused. Evidence is a fact or a set of facts considered in certain relations. Argument, in the sense of arguing or argumentation, is a process which consists of piecing together the facts and presenting them so that their relations may readily be seen. The facts which constitute the evidence, whether at a trial in a court of justice or elsewhere, are usually brought out heterogeneously,

some facts from this witness and some from that, without order or arrangement. Argument consists in re-stating the evidence and in marshalling the facts in the most effective order for the purpose of conviction.

In popular usage a fact adduced as evidence is sometimes called a proof of the thesis, and sometimes an argument in favor of its truth. An argument implies communication between two or more persons one of whom seeks to convince the other. Evidence does not necessarily imply more than one person. I may be convinced by evidence, that is, by facts which I observe, although no one else is present.

(b) *Principles.*

A principle is said to be a fundamental truth, a comprehensive law or doctrine, an axiom, a postulate, a general truth, a rule of action. For purposes of proof a principle may be defined as every true general proposition, whether definite or indefinite, which includes, and may be applied to, unascertained cases.

Principles may be divided according to their source into two general classes, namely, those derived from Experience and those derived from Authority.

Principles derived from experience are natural laws, as for example, All men are mortal; Arsenic is a poison; Unsupported bodies fall to the ground; The angle of the reflection of light is equal to its angle of incidence; The square of any number is four times the square of half that number; The three angles of every triangle are together equal to two right angles; Education increases the efficiency of labor.

A natural law is a rule which we have found to hold good either always or generally, and which we expect to hold good either always or generally. It is more than a summary of observed facts; it includes observed facts and inferred facts. Thus, the principle that "all men are mortal," includes not only men that are known to have died, but also those now living and yet to be born.

Principles derived from Experience may be divided into the following classes: (1) Causal laws; (2) Empirical laws, either of succession or co-existence; (3) Laws of Equality and Inequality, sometimes called Intuitive or Necessary truths.

A causal principle is one depending on a known or established relation of cause and effect, for example: Arsenic is a poison; Eclipses recur periodically; Unsupported bodies fall to the ground; Education increases the efficiency of labor.

Empirical principles are those which, although depending on, and confirmed by experience, have not as yet been shown to depend on any known relation of cause and effect; for example: All horned animals are ruminant; All men are mortal; All alloys of different metals are harder than any of their constituent elements; Substances containing a very high proportion of nitrogen are powerful poisons.

"Scientific inquirers," says Mill, "give the name of empirical laws to those uniformities which observation or experiment has shown to exist, but on which they hesitate to rely in cases varying much from those which have been actually observed, for want of seeing any reason why such a law should exist. It is implied, therefore, in the notion of an empirical law, that it is not an ultimate law; that if true at

all, its truth is capable of being, and requires to be accounted for. It is a derivative law, the derivation of which is not yet known. To state the explanation, the why, of an empirical law, would be to state the laws from which it is derived—the ultimate causes on which it is contingent. And if we knew these we should also know what are its limits; under what conditions it would cease to be fulfilled.

"The periodical return of eclipses, as originally ascertained by the perserving observation of the early Eastern astronomers, was an empirical law, until the general laws of the celestial motions had accounted for it. The following are empirical laws still waiting to be resolved into the simpler laws from which they are derived; the local laws of the flux and reflux of the tides in different places; the succession of different kinds of weather to certain appearances of sky; the apparent exceptions to the almost universal truth that bodies expand by increase of temperature; the law that gases have a strong tendency to permeate animal membranes; that substances containing a very high proportion of nitrogen, such as hydrocyanic acid and morphia, are powerful poisons; that when different metals are fused together the alloy is harder than the various elements; that the number of atoms of acid required to neutralize one atom of any base is equal to the number of atoms of oxygen in the base; that the solubility of substances in one another depends, at least in some degree, on the similarity of their elements.

"An empirical law, then, is an observed uniformity, presumed to be resolvable into simpler laws, but not yet resolved into them." [2]

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2. Mill: *System of Logic*, p. 366.

Necessary principles are those which, although found in experience and confirmed by it, are known to be true independently of experience. They are either self-evident or are derived from self-evident principles; for example: Things which are equal to the same thing are equal to one another; The three angles of every triangle are together equal to two right angles; The square of any number is four times the square of half that number.

The following are further examples of the three classes of principles derived from Experience:

Water seeks its own level;

Every species has come into existence coincident both in space and time with a pre-existent and closely allied species;

Every individual life undergoes a process of gradual development;

The average price of commodities is determined by the cost of the production of gold;

The price of food tends to increase with the increase of population;

As wealth increases prices tend to decline;

Equal volumes of gas under the same conditions of temperature and pressure contain the same number of molecules;

None of the antecedents of an effect which can be absent without preventing the effect is the cause of that effect;

The average price of manufactures approximates to their cost of production;

An increase in wages tends to enhance prices;

The effectual demand for any commodity varies inversely with the price;

The price of the products of agriculture tends to rise as population increases;

The price of protected manufactures tends to decline;

Men will not invest their capital if they cannot realize an adequate profit upon it;

Heavenly bodies describe equal areas in equal times;

In every homogeneous medium light moves in straight lines;

The price of commodities is regulated by the equalization of the demand to the supply;

The value of a commodity is based on its utility and the difficulty of obtaining it;

If there is an increase in the demand for agricultural produce it becomes necessary to resort to less productive land;

Every event has a cause;

The same or similar causes produce the same or similar effects in the same or similar circumstances;

Whatever is true of a thing is true of what essentially resembles it;

What a trustworthy witness testifies to is true.

Principles may be classed as either ultimate or derivative. Ultimate principles are those which cannot be rested on any higher or wider principle and which it is therefore impossible to prove. Thus, the principle that like causes produce like effects is derived from and confirmed by experience but it cannot be rested on any wider principle, and consequently cannot be proved. If any one chooses to deny its truth there is no argument by which the denial may be met. It can only be shown that such a one is inconsistent, as every one acts upon this principle and by implication admits it is true.

Derivative principles are those which can be traced back

to, and rested upon ultimate principles. The axioms of mathematics and other self-evident principles are usually regarded as ultimate, as although, according to Mill and Bain, they may be rested on, and proved by reference to, uncontradicted experience, they are perceived to be true independently of experience.

Principles derived from Authority are:

(1) Legal principles which depend on the authority of the law making power, and all rules declared or enacted for human guidance by legislatures, judges, councils, synods, or inspired writers. The following are examples:

No simple contract is binding on a party to it unless he receives a consideration for his promise;

Every will must be in writing;

A legacy to a witness of a will is void;

Every one is justified in using force in defence of his own person or that of any one under his protection;

Every one who is in peaceable possession of any movable property is justified in resisting the taking of such property by any trespasser;

Every one authorized to use force is criminally responsible for any excess, according to the nature of the act which constitutes the excess;

Every one is protected from criminal responsibility for any act done in obedience to the laws for the time being, made and enforced by those in possession *de facto* of the sovereign power in and over the place where the act is done;

No man ought to be a judge in his own cause;

Every man is presumed to be innocent until he is proved to be guilty;

Both parties to a suit should be heard before deciding in favor of either;

The defence of an accused person should be heard before he is condemned;

Every person who being a witness in a judicial proceeding makes a statement under oath which he knows to be false is guilty of perjury.

(2) Moral principles which depend on the authority of conscience, as for example, It is wrong to commit murder.

(3) Definitions, which commonly depend for their validity on consent or agreement, as for example, Every plane figure, bounded by a line which is everywhere equidistant from a given point within it, is a circle.

5. *Conclusive and Probable Proof.*

Proof is either conclusive or probable. To prove a proposition means strictly to establish its truth conclusively and beyond all doubt. In practice, however, a proposition is said to be proved when its truth is shown to be probable or highly probable, or so probable that we do not hesitate to act as if it were true. Thus, in a criminal trial, a prisoner's guilt is said to be proved when it is established beyond a reasonable doubt; and in a civil trial, the claim or defence is said to be proved when there is a mere preponderance of credible evidence in its favor.

In certain departments of our knowledge, for example, in mathematics, we look for complete proof or demonstration. But in the affairs of life with which the advocate is chiefly concerned, where action cannot wait on demonstration, it is

seldom possible on account of the vastness and complexity of the subject-matter, and our lack of complete knowledge to prove conclusively any question about which men dispute. There are many principles that cannot be asserted or accepted as true universally, but only generally, or in most cases, and when such a principle is relied on as the foundation of an argument, the thesis cannot be asserted as more than probably true. So, if the reason can be stated as probable only, the thesis can have no higher certainty. If an opponent makes sufficiently wide assertions or admissions, it is possible, of course, as against him to make a conclusive argument; but in most cases it is only possible to establish a thesis with a greater or less degree of probability, to afford a presumption of its truth and to shift the burden of proof on him who maintains the contrary. As probability is the guide of life, to achieve even so much is practically sufficient. For instance, when we argue that a policy of protection, or of free trade, or that a law prohibiting the liquor traffic, will be in the best interests of the country, it is impossible to demonstrate it. So, if we argue that the prisoner is guilty of theft because of his unexplained possession of the stolen goods, we cannot affirm that in every case a person is guilty of theft who has stolen goods in his possession and cannot explain how he came by them. All we can say is that these circumstances are a fairly constant sign of guilt; it is true in most cases in our experience. But courts of law act and impose penalties as if these facts constituted conclusive proof. So that proof, for all practical purposes, essentially consists, not in demonstration, but, according to Mr. Sidgwick, in successful resistance to attack; not in complete establishment beyond

all doubt, but establishment on a sound basis in the face of hostile criticism, by means of those tests which are in our power to apply.

"Intuition," says Wills, "is the foundation of demonstration, which consists of a series of steps severally resolvable into some intuitive truth; and its first principles are definitions, which exclude all ambiguities of language, and lead to infallibly certain conclusions. But the subjects which admit of the certainty of intuition and demonstration are comparatively few. Innumerable truths, the knowledge of which is indispensable to happiness, if not to existence, depend upon evidence of a totally different kind, and admit of no other guide than our own observation and experience, or the testimony of our fellow-men. Such truths involve questions of fact or of actual existence, which, as they are not of a necessary nature, may or may not have existed, without involving any contradiction, and as to which our reasonings and deductions may be erroneous. Such evidence is called moral evidence; probably because its principal application is to subjects directly or remotely connected with moral conduct and relations."[3]

6. *The Burden of Proof.*

In every dispute or controversy the question arises upon which of the two parties lies the burden of proving the questions at issue between them. The general rule is, that "he who asserts must prove." This rule, which is founded in common sense and justice, is followed not only in courts

3. Wills: *Circumstantial Evidence*, p. 4.

of law but in the ordinary affairs of life. Thus, if a charge is made against a person of wrong-doing which he denies, the accused is not called on to disprove the charge until some evidence is given of its truth.

Every controversy ultimately resolves itself into this, that certain facts or propositions are asserted by one of the disputants, which are denied, or at least not admitted, by the other. Now, where there are no antecedent grounds for supposing that what is asserted by one party is more probable that what is denied by the other, and the means of proof are equally accessible to both, the party who asserts the fact or proposition must prove his assertion, or, in other words, the burden of proof lies upon him. The party who denies that fact or proposition need not give any reason or evidence to show the contrary until his adversary has at least shown some probable grounds for belief in it. In order to determine on which of two parties the burden of proof lies the following test has been applied in judicial tribunals: which party would be successful if no evidence at all were given.[4]

As, however, the question of the burden of proof may arise at any time during the course of the controversy, the test should, in order to cover all cases, be stated thus: which party would be successful if no evidence at all, or no more evidence, as the case may be, were given.[5]

The burden of proof, then, rests before the evidence is gone into, upon the party asserting the affirmative of the issue; and it rests, after the evidence is gone into, upon the

4. *Amos* v. *Hughes*, 1 Moo. & R. 464.

5. *Baker* v. *Batt*, 2 Moo. P. C. 317, 319

party against whom the tribunal, at the time the question arises, would give judgment if no further evidence were adduced.

In deciding which party asserts the affirmative, however, regard must be had to the substance of the issue, and not merely to its grammatical form, which latter the pleader can frequently vary at will. The meaning of the rule is, that where a given allegation, whether affirmative or negative, forms an essential part of a party's case, whether as claim or defence, the burden of proving such allegation rests on that party. A negative allegation must not be confounded with the mere denial of an affirmative one.

When the allegation is affirmative both in substance and in form, the case is simple. Thus, if A asserts that he has sold goods to B, or that B has published a libel concerning him, he must, of course, prove the contract or tort. The following are examples of averments which are affirmative in substance, although negative in form: a claim against a tenant for not repairing according to covenant; against a solicitor for not using due diligence; against a prosecutor for instituting proceedings without reasonable and probable cause. In *Amos* v. *Hughes*, which was an action on a contract to emboss calico in a workmanlike manner, the plaintiff complained and alleged that the defendant did not emboss the calico in a workmanlike manner; to which the defendant pleaded that he did emboss the calico in a workmanlike manner. The court held that questions of this kind were not to be decided by simply ascertaining who had asserted the affirmative in point of form; that supposing no evidence were given on either side, the defendant would be entitled to

the verdict, for it was not to be assumed that the work was badly executed, and consequently that the burden of proof was upon the plaintiff.

The burden of proof, which in the first instance lies on the assertor of the question in dispute, is often shifted during the course of the controversy to his opponent by (1) presumptions, and (2) by *primâ facie* evidence. When there exists a presumption in favor of a party, the burden of rebutting that presumption rests on his adversary. In an argument from testimony there is a presumption in favor of the witness, that he is trustworthy until the contrary is shown. This is another way of saying that the burden of proving a witness to be untrustworthy is upon him who contests the truth of his testimony.

If some evidence is given of the proposition to be proved, especially if what is called a *primâ facie* case is made out, the burden of proof is usually shifted to him who disputes that proposition. Parties to disputes do not always claim their rights in regard to the burden of proof. A person who disputes a charge against him often undertakes to disprove it, although no evidence has been given of its truth. There is great danger in such a course, since if he fails to disprove it, those addressed may think the charge is true, while if he had simply denied the charge and challenged proof, the charge may have fallen to the ground for want of anything to substantiate it.

CHAPTER III.

CLASSIFICATION OF ARGUMENTS.

HAVING regard to the requirements of proof, all arguments are alike; every thesis that can be said to be proved must be brought under an established Principle by means of an established Reason. But while all arguments have this fundamental unity, they may differ in their form and in their subject-matter, and they may consequently be divided into an indefinite number of classes, according to the property that may be fixed on as the basis of distinction. For the purpose of indicating their more important differences it will be convenient to divide them into the following classes:—

1. Arguments from Experience and Arguments from Authority.

2. Deductive and Inductive Arguments.

3. Conditional and Unconditional Arguments.

4. Direct and Indirect Arguments.

It will be observed that these are cross-divisions based on different principles. Each division is exhaustive, (except perhaps the second) and exhibits all arguments from a particular point of view, and the student is warned against confusing the distinctions which are intended by these divisions to be kept separate. "Arguments may be divided," says Whately, "according to several different principles; that is, logically speaking, there are several divisions of them. And these cross-divisions have proved a source of endless

perplexity to the logical and rhetorical student, because there is perhaps no writer on either subject that has been aware of their character. Hardly anything perhaps has contributed so much to lessen the interest and the utility of systems of rhetoric, as the indistinctness hence resulting."

The first division distinguishes arguments according to the subject-matter of the principle on which they are founded. An argument from Experience is one in which the principle on which it depends is derived from or confirmed by Experience. Arguments from Experience include the following classes: (1) from Example, (2) from Analogy, (3) from Cause to Effect, (4) from Effect to Cause, (5) from Testimony, (6) from Circumstantial Evidence, (7) from Association, and (8) from Equality. These arguments are distinguished by the nature of the Reason and the relation it bears to the thesis. Thus, in the argument from Example the Reason consists of examples; in the argument from Analogy, of resemblance; in the argument from Cause to Effect, the relation of the reason to the thesis is one of cause and effect.

Arguments from Experience are further distinguished . the nature of the principles on which they are founded. Thus, arguments from Example and from Analogy are founded on what may be called ultimate principles, arguments from Cause to Effect, from Effect to Cause, from Testimony, and from Circumstantial Evidence depend on causal principles, arguments from Association depend on empirical principles, and arguments from Equality, on necessary or intuitive principles.

Arguments from Authority are based on principles

derived from Authority. This class includes all arguments depending on legal or moral principles, and principles in the nature of definitions. The distinction between arguments from Experience and those from Authority is similar to that made by lawyers when they separate questions of fact from questions of law.

The second division includes Deductive and Inductive arguments. Many writers have used these terms to include all arguments whatsoever; but there is a decided tendency at the present time to give them a narrower signification, and to employ them to denote only those arguments in which the thesis is a general proposition, and to distinguish them by the character of the Reason. A Deductive argument, then, is one used to prove a general proposition where the Reason relied on is also a general proposition or principle. An Inductive argument is one used to prove a general proposition, where the Reason relied on is a statement of facts or evidence. The distinction will be further discussed in a subsequent chapter.

Conditional and unconditional arguments are distinguished according as the Principle on which they depend is a conditional or an unconditional proposition.

The fourth division classes arguments as either direct or indirect. In a direct argument the thesis is proved or disproved by the reasons in the first instance. In an indirect argument the thesis is proved by disproving some other fact or proposition the falsity of which implies the truth of the thesis, or disproved by proving some other fact or proposition the truth of which implies the falsity of the thesis.

CHAPTER IV.

ARGUMENTS FROM EXPERIENCE.

SECTION I.

ARGUMENTS FROM EXAMPLE.

THERE are two classes of Arguments from Example, one of which is used to prove the relation of Cause and Effect, and the other to prove general propositions.

SUB-SECTION I.

TO PROVE THE RELATION OF CAUSE AND EFFECT.

By an effect is meant any phenomenon, anything that appears or that happens, any thing or any change, however slight, in any thing or group of things. A cause we understand to mean some circumstance or combination of circumstances, some thing, act, force, or agent, antecedent to an effect, in the absence of which the effect would not have appeared, on which the effect is said to depend, and to which we ascribe the power of producing the effect.

The most familiar types of causes are those of personal agency. In the early stages of man's history personal agency was the only cause that could be conceived. Effects that could not be accounted for by man's agency, thunder, lightning, storm and wind, the return of the seasons and, generally,

all natural phenomena, were ascribed to the activities of divine or quasi-divine personalities. The conception of a natural cause, of force resident in matter, by which changes are brought about, is a comparatively late product of human reason. Even Kepler who discovered the empirical laws of the motions of the planets but was not aware of the underlying cause, entertained the idea that the planets were guided in their courses by presiding spirits. This theory was dispelled when Newton proved the cause to be mass attraction and formulated the law of gravitation.

When an agent or circumstance has been found to be capable of producing an effect it is often called a cause, or a potential cause, as opposed to an actual cause, although it is not thought of at the time as associated with any particular effect. Thus, heat, light, electricity, magnetism, the attraction of gravitation, chemical affinity, the forces which sustain or destroy life, foods, stimulants, medicines, poisons, may in this sense be termed causes.

Many things may be both causes and effects. Thus, every continuous proce ., for example, disease, at any particular moment, exhibits, in one aspect, the last effect of a chain of causes and the beginning or cause of a chain of effects, every stage being the effect of what immediately precedes, and the cause of what immediately follows. The whole of the complex changes which make up the history of the material universe may be regarded as a succession of causes and effects.

A given circumstance or agency may be both a cause and an effect, or in other words, two things may be so related, that each will be at one time a cause, and at another time an

effect, of the other. Thus, an abundance of capital tends to the increased employment of labor, and the increased employment of labor tends to produce more capital. Professor Dicey has pointed out that laws are the outcome of public opinion, and that laws once enacted have a large share in creating public opinion.

When an effect depends on several circumstances, or on a chain of circumstances, the cause is strictly speaking the whole of those circumstances, the sum total of the conditions, positive and negative, without which the effect would not have come to pass. But in practice we usually attribute the cause to some one circumstance or agency which is the nearest at hand, or the most conspicuous, or the most important for our immediate enquiry, a negative condition being often called a cause. Thus, if the lighting of a match depends on the presence of oxygen in the air, the absence of moisture, a certain degree of friction, and sundry ingredients properly compounded with which the match is tipped, any one of these circumstances might be called the cause, although the conjunction of all of them is necessary to produce the effect.

"Such an event as the preaching of Luther against indulgence money might easily have occured, without being followed by a consequence of such magnitude at the Reformation; nor would any such effect have happened, unless the various circumstances predisposing to it had already been in existence. An event such as the preaching of Luther is like the last feather which breaks the camel's back, or the drop which makes the cup overflow.

"A large aggregation of influences had been gradually

taking place, each one inadequate by itself to the production of the effect, but combined, they are ultimately sufficient. As the last events are those which immediately precede the effect, they attract the chief attention, and appear the most operative; thus, the casting vote by a president, by which a question is decided seems the most important, though, in fact, it counts for no more than any other vote in the assembly."[1]

Or again, let us suppose that A fires a pistol at B which results in B's death. Between the first act of pulling the trigger and B's death there is a chain of intervening circumstances, the falling of the hammer, the ignition of the powder, its explosion, the flight of the bullet, its impact and the physiological processes which finally end in B's death, any one of which might be called the cause. We might go further back and enquire what motive, anger, hatred, jealousy, revenge, covetousness, or other passion caused A to fire the shot, or still further, out of what circumstances the motive arose and so on *ad infinitum*. In this case, a physician would doubtless ascribe the cause to one thing, as for example, the severing of an artery, a jury would say that A caused B's death, and a criminologist would say that drunkenness, or insanity, or environment, or heredity was the cause, and so on, according to the stage of the process which was the subject of their immediate enquiry. This example serves to illustrate the distinction often made by jurists between proximate and remote causes, a distinction similar

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1. Sir G. C. Lewis: *Methods of Observation and Reasoning in Politics*, Vol. 1, p. 351.

to that made by physicians between exciting and predisposing causes of disease.

The proof of causes would be comparatively free from difficulty if every effect were due to one cause, and only one, and if every cause inevitably produced its effect without interference from counteracting causes. Plurality of causes implies two or more distinct causes any one of which singly may produce the effect in question. Thus, heat may be an effect of the sun, of friction, of percussion, of chemical or electrical action. Death may be due to drowning, poisoning, blows, wounds, or one of many diseases, which are separate and distinct causes.

Counteracting causes are those which modify, neutralize, or prevent the effect which another cause acting alone would have. Thus, two or more forces may mutually modify one another and contribute to produce an effect differing from that which any one of the forces acting alone would produce; antidotes may wholly or partially neutralize the action of poisons; medicines may arrest the progress of a disease or completely cure it; the price of an article of commerce may be increased or decreased or rendered stationary by the joint operation of many factors, such as supply and demand, the cost of production, the imposition of a protective duty, the rate of wages, competition, etc.

Two things in sequence may be related as cause and effect, or as joint effects of a common cause more or less remote, or wholly unrelated, in much the same way that two men may be related as father and son, brothers or cousins in various degrees, that is, descendants of a common ancestor more or less remote, or wholly unrelated.

The proof of the relation of cause and effect ultimately depends on two principles,—the law of Universal Causation, usually expressed by saying that "Every event has a cause," and the law of the Uniform Action of Causes, usually expressed by saying that "Like causes produce like effects in like circumstances." Whether or not these principles are capable of proof it is unnecessary to enquire. It is enough for practical purposes that they are universally acted on and believed to be true. We cannot suppose them to be false in any single instance, and we may regard them as ultimate principles which it is unnecessary to prove, as they are never called in question or disputed.

The cause of a given effect is to be found among the antecedent circumstances of that effect. The question of the proof of causes may be best approached by considering first the disproof of alleged or supposed causes. Taking the antecedents of an effect one by one, we proceed to exclude or eliminate them by showing that each one is not the cause, until only one antecedent is left. If it can be shown that all the antecedents but one are unconnected with the effect, that one must be the cause, otherwise the effect would have no cause. But it is impossible, having regard to the principle of Universal Causation, that the effect should have no cause, therefore the only other antecedent must be the cause.

There are two arguments by which an antecedent of an effect may be shown not to be a cause: First: It may be argued that a given circumstance is unconnected with the effect, by producing or citing one or more instances or examples where the effect appears in the absence of that circumstance. Secondly, it may be argued that a given

circumstance is unconnected with the effect by producing or citing one or more instances where that circumstance present and the effect does not appear. In such cases disproof is rested on two principles which may be stated as follows:

1. *None of the antecedents of an effect which can be absent without preventing the effect is the cause.*

2. *None of the antecedents of an effect that can be present without producing the effect is the cause.*

These principles are deduced from the Law of Universal Causation and the Law of the Uniform Action of Causes respectively.

Further, it may be argued that a given antecedent circumstance is not a counter-acting cause by two similar arguments, first, by citing one or more instances where that circumstance is present without preventing the effect, and secondly, by citing one or more instances where that circumstance is absent and the effect does not appear.

The following is an outline of a series of arguments in which proof of a cause is attempted in this way:

"Let the enquiry, for example, be into the cause of endemic goitre. Instances of the disease have been collected from the medical observations of all countries over many years. Why is it endemic in some localities and not in others? One of the earliest theories was that endemic goitre was connected with the altitude and configuration of the ground, some notorious centres of it being deeply cleft mountain valleys, with little air and wind and damp marshy soil. But wider observation found it in many valleys neither narrower nor deeper than others that were exempt,

and also in wide exposed valleys such as the Aar. Was it due to the geological formation? This also had to be abandoned, for the disease is often incident within narrow limits, occuring in some villages and sparing others though the geological formation is absolutely the same. Was it due to the character of the drinking-water? Especially to the presence of lime or magnesia? This theory was held strongly, and certain springs characterised as goitre-springs. But the springs in some goitre centres show not a trace of magnesia. The comparative immunity of coast regions suggested that it might be owing to a deficiency of iodine in the drinking-water and the air, and many instances were adduced in favour of this. But further inquiries made out the presence of iodine in considerable quantities, in the air, the water, and the vegetation of districts where goitre was widely prevalent; while in Cuba it is said that not a trace of iodine is discoverable either in the air or the water, and yet it is quite free from goitre. After a huge multiplication of instances, resulting in the elimination of every local condition that had been suggested as a possible cause, Hirsch came to the conclusion that the true cause must be a morbid poison, and that endemic goitre has to be reckoned among the infectious diseases."[2]

The arguments may be expressed in full as follows:

Thesis: Magnesia in the drinking water, altitude, configuration of the ground, marshy soil, geological formation, etc., are not causes of goitre.

Reason: Because they can be absent without preventing the effect.

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2. Minto: *Logic, Inductive and Deductive*, p. 319.

Principle: None of the antecedents of an effect that can be absent without preventing the effect is the cause.

Thesis: Magnesia, etc., are not causes of goitre.

Reason: Because they can be present without producing the effect.

Principle: None of the antecedents of an effect that can be present without producing the effect is the cause.

Thesis: Iodine in the drinking water is not the preventive (or a counter-acting cause) of goitre.

Reason: Because it can be present without preventing the effect.

Principle: None of the antecedents of an effect that can be present without preventing the effect is the preventive (or counter-acting cause) of that effect.

Thesis: Iodine in the drinking water is not the preventive of goitre.

Reason: Because it can be absent without the effect following.

Principle: None of the antecedents of an effect that can be absent without the effect following is the preventive (or counter-acting cause) of that effect.

The main argument may be stated as follows:

Thesis: Morbid poison is the cause of goitre.

Reason: Because it is an invariable antecedent of the disease and all other antecedents have been shown to be unconnected with it.

Principle: Where all the antecedents of an effect but one have been shown to be unconnected with the effect, that one is the cause.

This method of proof proceeds on the assumption that all the antecedents of the effect have been taken into account and that there is only one cause to which the effect can be due. Although doubt may exist as to the truth of these assumptions it is possible with a large number of instances to reach a probable or highly probable result. And even if the cause of a given effect cannot be established, it may be possible to show what it is not. Thus, it is alleged that capital punishment for murder has a greater deterrent effect upon criminals than imprisonment for life. This can be met by citing instances of countries, for example, Belgium, Finland, Holland and Portugal, among foreign countries, and Iowa, Michigan and Wisconsin, in the United States, where the number of murders in proportion to population has not increased, or has decreased, after the abolition of capital punishment compared with the number of murders while capital punishment was in force.

This method, however, is often too long, and it might not be possible to find the instances, the exact kind of collocation of circumstances, by which the causal quality of every antecedent might be disproved, and unless and until this is done the proof is not complete. The principles or Canons of Induction which were first definitely formulated by John Stuart Mill are, as it were, short-hand methods, and provide means whereby causes may be proved with the fewest possible number of instances.

1. *Argument from Single Agreement.*

In many cases we may be able, from previous experience of the subject-matter, to exclude at once many of the antece-

dents as unconnected with the effect, and at the same time to fix on one as a more or less probable cause. Then, if we can cite two or more instances where the effect in question appears which agree in having this one antecedent, and differ in all other antecedents, we may argue that that one is the cause. Thus, if the taking of a particular medicine is followed by a peculiar effect, and repetition is invariably followed by the same effect, although all other antecedents, time, season, foods, state of health, etc., are different, we conclude that that medicine is the cause of that effect. The argument proceeds on the assumption that there is only one cause to which the effect can be due, and it approaches to conclusiveness in so far as it is shown that all the antecedents have been taken into account.

The principle on which we rely may be stated as follows:

When two or more instances of an effect have only one antecedent in common that one is the cause.

This principle is a somewhat modified form of Mill's method of Agreement which is as follows: When two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree is the cause (or effect) of the given phenomenon.

The principle is stated by Jevons as follows: The sole invariable antecedent of an effect is probably its cause.

The following example is quoted from Mill:

"Let the effect be crystallization. We compare instances in which bodies are known to assume crystalline structure, but which have no other point of agreement;

and we find them to have one, and, as far as we can observe, only one antecedent is common,—the deposition of a solid matter from a liquid state of fusion or solution. We conclude, therefore, that the solidification of a substance from a liquid state is an invariable antecedent of its crystallization."

The following example of this form of argument is taken from the speech of Henry Clay on the American System, by which he sought to prove that protection tends to cause a decline in price of the objects protected.

"Under the operation of the American System, the objects which it protects and fosters are brought to the consumer at cheaper prices than they commanded prior to its introduction, or, than they would command if it did not exist.

"Brown sugar, during ten years, from 1792 to 1802, with a duty of one and a half cents per pound, averaged fourteen cents per pound. The same article, during ten years, from 1820 to 1830, with a duty of three cents, has averaged only eight cents per pound. Nails, with a duty of five cents per pound, are selling at six cents. Window-glass, eight by ten, prior to the tariff of 1824, sold at twelve or thirteen dollars per hundred feet; it now sells for three dollars and seventy-five cents.

"I hold in my hand a statement, derived from the most authentic source, showing that the identical description of cotton cloth, which sold in 1817 at twenty-nine cents per yard, was sold in 1819 at twenty-one cents, in 1823 at seventeen cents, in 1825 at fourteen and a half cents, in 1827 at thirteen cents, in 1829 at nine cents, in 1831 at from ten

and a half to eleven. Such is the wonderful effect of protection, competition, and improvement in skill combined.

"In respect to woollens, every gentleman's own observation and experience will enable him to judge of the great reduction of price which has taken place in most of these articles since the tariff of 1824. It would have been still greater, but for the high duty on the raw material, imposed for the particular benefit of the farming interest. But, without going into particular details I shall limit myself to inviting the attention of the Senate to a single article of general and necessary use. The protection given to flannels in 1828 was fully adequate. It has enabled the American manufacturer to obtain complete possession of the American market; and now, let us look at the effect. I have before me a statement from a highly respectable mercantile house, showing the price of four descriptions of flannels during six years. The average price of them, in 1826, was thirty-eight and three-quarter cents; in 1827, thirty-eight; in 1828 (the year of the tariff) forty-six; in 1829, thirty-six; in 1830, (notwithstanding the advance in the price of wool) thirty-two; and in 1831, thirty-two and one-quarter. These facts require no comments."

The proof ultimately depends on a principle formerly mentioned, namely, that "none of the antecedents of an effect which can be absent without preventing the effect is the cause." Thus, if in one instance, antecedents A, B, and C are followed by an effect, and in another instance, antecedents A, D, and E are followed by the same effect, then it may be argued that antecedents D and E are not connected with the effect because the effect appeared in their absence

in the first instance, and antecedents B and C are unconnected with the effect because the effect appeared in their absence in the second instance. Since A is the only other antecedent it is concluded that A is the cause.

The whole of the argument is seldom stated in full. The reason, indeed, is often incomplete. One or more instances are usually given and the rest of the reason is assumed. An appeal is made to those addressed to recognize these as sufficient, and to supply from their own experience additional positive and negative facts necessary to complete the argument.

2. *Argument from Double Agreement.*

The dangers incident to the argument from Single Agreement may be met if, in addition to the two or more instances of the effect which agree only in the presence of one antecedent, two or more instances, otherwise similar, can be cited in which the effect does not appear, and which agree only in the absence of that antecedent.

The principle required for proof may be stated as follows:

If two or more instances where the effect in question appears have only one antecedent in common, and two or more instances in the same department of investigation have nothing in common except the absence of that antecedent, that antecedent is the cause of the effect.

The principle formulated by Mill which he calls the Joint method of Agreement and Difference is as follows: If two or more instances in which the phenomenon occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common

save the absence of that circumstance; the circumstance in which alone the two sets of instances differ is the effect or the cause or an indispensable part of the cause of the phenomenon.

The argument depends on a double agreement. One set of instances agree in the presence of but one antecedent, and the other set of instances agree only in the absence of that antecedent, hence the name of double agreement, which is adopted from Professor Fowler.

"If," says Professor Fowler, "when I take a particular kind of food, I find that I invariably suffer from some particular form of illness, whereas when I leave off, I cease to suffer, I entertain a double assurance that the food is the cause of my illness. I have observed that a certain plant is invariably plentiful on a particular soil; if, with a wide experience I fail to find it growing on any other soil, I feel confirmed in my belief that there is in this particular soil some chemical constituent or some peculiar combination of chemical constituents, which is highly favorable, if not essential to the growth of the plant."

The following example is taken from a report of a committee appointed to investigate the cause of an epidemic of typhoid fever:

"The milk supply of the households in the infected districts was derived from various suburban dealers; but it was found in each case that some households were infected and others not. There were three sources of supply of drinking water, namely, deep artesian wells, surface wells and a small river the water from which was filtered by a water company and supplied through mains. Upon in-

vestigation it was found that the infected households, although differing in locality, in their sources of milk supply, and in other general conditions, were all supplied with drinking water from surface wells, while in the households which were supplied with drinking water from other sources the disease did not appear."

Here we find that several instances where the effect in question appears, all agree in the presence of only one antecedent, while several instances otherwise similar in which the effect does not appear agree only in the absence of that antecedent.

The following example is taken from Mill, who, after describing Well's *Theory of Dew*, and enumerating various instances where much dew is deposited and also various instances where no dew or very little is deposited, says: "It thus appears that the instances in which much dew is deposited, which are very various, agree in this, and, so far as we are able to observe, in this only, that they either radiate heat rapidly or conduct it slowly: qualities between which there is no other circumstance of agreement than that by virtue of either, the body tends to lose heat from the surface more rapidly than it can be restored from within. The instances, on the contrary, in which no dew, or but a small quantity of it, is formed, and which are also extremely various, agree (as far as we can observe) in nothing except in not having this same property."

3. *The Argument from Difference.*

The principle upon which proof depends in the argument from Difference may be stated as follows:

If an instance in which the effect under investigation occurs, and an instance in which it does not occur have every other circumstance in common except one, that one occurring only in the former, that one is the cause of the effect.

Mill's statement of the principle is as follows: If an instance in which the phenomenon under investigation occurs and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or the cause, or an indispensable part of the cause of the phenomenon.

The principle is stated by Jevons as follows:

"The antecedent which is invariably present when the effect appears, and invariably absent when the effect does not appear, other circumstances remaining the same, is the cause of that effect."

Most of the arguments and inferences of cause and effect which we make or draw in daily life are justified by reference to this principle. This principle is moreover the great guide in experimental investigation and is called by Professor Sidgwick the sheet-anchor of empirical proof. Whenever we make an experiment we seek to satisfy the conditions required by this principle. It is the ideal to which the principles of Single Agreement and Double Agreement are an approximation, but it can seldom be employed except where we can control or experiment with the circumstances. Thus, if we apply a certain degree of heat to water, it boils; if we do not apply heat that effect does not appear. If two suspended bodies of unequal weight, say a coin and a feather, be released at the same moment, it will be observed

that the heavier body will reach the ground first. If the same bodies be suspended in a receiver from which the air has been exhausted, and released at the same moment, they will reach the bottom at the same time. We argue from this that the resistance of the air was the cause of their falling in unequal times, because the two instances are precisely alike in all circumstances except the resistance of the air, and the falling in unequal times, which are present in the first, and not in the second instance.

"A simpler illustration," says Sir G. C. Lewis, "of this method cannot, perhaps, be given than the reflection of an object in a mirror: whatever changes the object may undergo are faithfully repeated in the mirror, so that if any doubt existed at first as to the object being the cause of the reflection, the imitation of its changes would remove the doubt."

The following is an account of an experiment made to prove that worry causes a cessation of the digestive process:

"There is a chemical substance, subnitrate of bismuth, which can be introduced into a cat's stomach without injury. It is impervious to the X-rays; and so, if a cat is given a meal which contains a certain amount of it, the workings of the digestive organs can be observed with an X-ray machine. It has been demonstrated that so long as Pussy is kept in a worried state of mind, disturbed by trifles, such as teasing, tickled nose, change of position and the like, the stomach does no digestive work. The rhythmical contractions do not take place, the gastric juices do not flow, everything is at a standstill. Pussy's mind must be at rest if she is to avoid indigestion."[3]

3. Dr. L. H. Gulick, *Ladies' Home Journal*, June, 1908.

The following is an argument to prove that the power of originating voluntary movements resides in the brain and spinal cord:

"Here, then, is a capital fact. The movements of the lobster are due to muscular contractility. But why does a muscle contract at one time and not at another? Why does one whole group of muscles contract when the lobster wishes to extend his tail, and another group when he desires to bend it? What is it originates, directs, and controls the motive power?

"Experiment, the great instrument for the ascertainment of truth in physical science, answers this question for us. In the head of the lobster there lies a small mass of that peculiar tissue which is known as nervous substance. Cords of similar matter connect the brain of the lobster, directly or indirectly, with the muscles. Now, if these communicating cords are cut, the brain remaining entire, the power of exerting what we call voluntary motion in the parts below the section is destroyed; and on the other hand, if, the cords remaining entire, the brain mass be destroyed, the same voluntary mobility is equally lost. Whence the inevitable conclusion is, that the power of originating these motions resides in the brain and is propagated along the nervous cords."[4]

The effects of a law which has been long in force can best be established by the argument from agreement, while the effects of a new law or regulation can be established by the argument from difference, that is, by comparing the

4. Prof. Huxley: *On the Study of Zoology.*

state of things before and after its introduction, or by comparing two countries or communities in one of which the law or regulation is in force, and in the other it is not.

The application of the foregoing principles may be made in the following extract which contains various arguments from Example to prove that exposure to wet and cold or to great and sudden changes of temperature is not the cause, as is commonly supposed, of people "catching cold," or contracting other inflammatory complaints, and that strong and hardy constitutions are not always preventing causes; together with arguments to prove that taking cold is really due to improper eating, especially overeating, impure air, lack of exercise, and overwork or clogging of the eliminative organs of the body, especially the skin.

"When Captain Parry and his crew were in the Arctic regions they were constantly repassing from the cabin of their vessel into the open air and back again, thereby undergoing in less than one minute of time a change in temperature of from eighty to one hundred degrees, and in several instances, of one hundred and twenty degrees. And yet, says the account, 'not a single inflammatory complaint occurred during this particular period.' Nansen had a similar experience; neither he nor his companions had such a thing as a cold during the three years that they spent in the Arctic regions, although they were exposed to cold, fatigue and wettings to a degree which we can hardly realize.

"It will be said, of course, that they were all strong, hardy men, selected for their ability to withstand cold and hardships. That is true. But what was their fate on leaving the 'cold, inhospitable North'? As soon as they

returned to civilization they all 'caught cold' and were laid up with severe attacks of influenza.

"It is said that persons who are immersed in baptism in rivers and lakes in the depth of winter never take cold, and this is attributed to the state of spiritual exaltation in which they undergo this ordeal. That explanation, however, is hardly practical, for the rubbers in Turkish bath-houses and the people who regularly bathe in ice-cold water in winter do not take cold from these habits, as every one knows. The Indian did not take cold so long as he wore only the scanty raiment of his own devising. Every one remembers the answer of the Indian who was asked why he did not suffer from the cold as he went about in winter weather with so much of his body uncovered. He replied by asking the white man if his face suffered from being uncovered, and, when told that it did not, replied: 'Indian all face.'

"Captain Von Schmidt, who had been sent to sea as a boy in the hope that it would cure him of consumption, although he was not expected to come back alive, observed that the natives of Terra del Fuego, men, women and children, went about practically naked in the snow, and were, as is so generally known, remarkable specimens of size, strength and agility. The young sailor not unnaturally concluded that their freedom from raiment was one cause of their freedom from disease, and determined that he would, as far as possible, profit by their example. He did this, and declares that the practice cured him of the fearful disease from which he was suffering, and which had carried off most of the members of his family. The inmates of the

seaside hospital at Coney Island for children suffering with tuberculosis of other parts of the body than the lungs (as, for instance, the hip and spine), spend practically the entire year outdoors; their windows are never closed. They 'make remarkable progress, while colds and sore throats are unknown.' Many more instances might be quoted; but enough have been given to make it clear that living outdoors, exposure to a low temperature and to sudden changes of temperature, and immersing the body in ice water, will not of themselves give a person—even a person with tuberculosis—a cold. On the other hand, these very practices unquestionably prevent people from taking cold.

"The underlying cause of most colds is overeating and improper eating. Here is an illustration of this which came under my observation recently. I have a patient whose nervous system is so sensitive that she cannot eat the smallest morsel of food beyond her actual needs without sneezing and frequently exhibiting other signs of an on-coming influenza. The other evening I dropped in at this lady's house to make a social call. She, at first, had to excuse herself, but presently appeared. Her voice was so hoarse that she talked with difficulty, her eyes were suffused with tears, her nose was running and she sneezed from time to time. I asked her what she had eaten, and was told that she had had one teaspoonful of salad at supper, which had not agreed with her. A young woman present added to this that she could never eat cabbage, because the next day she would be kept in bed with white patches on her tonsils and a sore throat.

"These cases remind one of the family that Doctor

Herring tells of that invariably have 'colds in the head' the day after eating roast goose. A Member of Parliament once answered a complaint about the bad air of the Parliament House by saying that he did not mind it if he did not eat too much. A starving man cannot take cold. Nansen and his men did not take cold so long as they ate only the ship's ration, but when they were feasted and fêted after they got home again they immediately had severe colds.

"An account of a family of three children was given recently. The children had been constantly subject to colds and other illnesses, so that, usually, one or more of them would be under the doctor's care from October to April. By taking an air-bath, morning and night, they escaped all colds last winter and did not need the doctor once. Their mother, seeing the good effect upon her children, also took air-baths and escaped her usual colds. Everything else in their lives seems to have been properly regulated, but they did not escape colds until they began toning up their skins by air-baths."

In the following extract, written by a physician, are to be found further examples of the foregoing arguments:

"Very few persons have any idea that various colors cause different sensations and feelings; that they are an actual factor in their effects upon the nervous system.

"Without thinking much about cause and effect we assent to the generalization that green, for example, is the most restful of all the colors, and we realize the wisdom of its having been given to us as the dominating note in Nature. We say red is warm, blue is cold, yellow is cheerful, violet is sad, etc., but how many stop to think of the reason for all this?

"Violet, the color of sadness and grief, is the most depressing of all the colors, and produces the most terrible mental depression and stagnation in persons exposed to its exclusive influence. This fact has been made use of by the Russian autocracy, which has, or had, rooms in one of its places of 'retirement' from the world, in which are confined those men of unusually brilliant mental attainments who oppose its government policies. All rays of light, the vibrations of which are slower than those of blue or violet, are excluded from these rooms. In every case the mind of the occupant, once brilliantly alert, becomes so dulled that he is unable to cope with the simplest facts of life.

"Red has the most exciting effect upon the nerves, because it is the most powerful of all the colors. And instances are numerous of those who, living in rooms papered and furnished in red, become cases for nerve specialists.

"A physician, for example, noticed that one member after another of a certain family came to him for treatment. First it was the mother, then the two daughters, in time the son, and the father. He could find no definite reason of a domestic or business nature as a basis for the nervous condition of the family. Presently a grave illness occurred in the family, and he spent all of one day and a night in the home.

"Shortly afterward the house was closed for a period, and before the family left, the physician said to the husband: 'I should like to have you try an experiment, if you will. I notice that you and your family are very fond of red; your dining-room is papered in red; the chief color in your library is red; three of the bedrooms I have been in are

furnished in red. Suppose, while you are away, you have your house redecorated; substitute yellows, greens, browns, or tans for the present reds, and see what the result will be upon the health of your family.'

"The changes were made. Two years have now elapsed, and not only has the nervous condition of the family improved, but, moreover, they have ceased to be patients of the physician. 'It is a psychological fact,' said the physician in explanation, 'but very few of us realize it. To live daily under the influence of red is to excite the nerves.'

"Photographers have slowly but surely found out that the use of red in their 'dark rooms' for the development of their plates has caused the nerves of the workers to be wrought upon; they become restless, noisy and often quarrelsome. In many cases the experiment has been tried of substituting orange light, which is the next strongest to red in power, and invariably with the result of a pronounced diminution in the nervous excitability of the workers in the 'dark room.'

"To prevent pitting, smallpox patients are sometimes placed in exclusively red rooms. After varied lengths of time they invariably beg most piteously to be taken out. If they are not soon removed they become delirious and often have convulsions. This test has, of course, for humane reasons, never been carried further, but the experiment, so far as it has been tried, leaves no room for doubt that, if the patients were kept in the room, insanity would be the result. After removal the patients cease their delirious ravings, and show the greatest mental and nervous relief.

"Watch an audience at a theatre where a spectacular play is given and where the members of the ballet are marched

on the stage in solid 'battalions' or 'phalanxes,' representing the different colors. As the greens, shading into olive, the browns, shading into tan and yellow, come on the stage there is a satisfied exclamation of 'Isn't that beautiful?' With the the blue and the violet comes the suggestion of quiet and calm. When the red appears, under its exciting influence the audience will involuntarily and instantly break into spontaneous applause. It is not that the eye is fonder of red than of green; it is that red has an instantaneous effect upon the nervous system that immediately seeks the same effect that red has upon the bull, only the human intelligence comes to the rescue and modifies nervous anger into nervous restlessness and disquietude.

"The effect upon women is particularly noticeable and injurious. Dressmakers will tell you that they prefer not to make up red materials; that they do not allow a single girl or any one set of girls to work on red for any great length of time. Experiments have proved that it first produces a a feeling that makes the girls tired, then it gives them headaches and causes nausea. The explanation of this is simple: the eye is first stimulated, causing certain centres of the brain to become too active, and from that point the stimulation goes through the nerves to various parts of the body.

"I recall a woman whom I was treating. She was soon to become a mother. She had been entirely free from the accompanying nausea until one day when she wore a red dress. She was attacked with vomiting. When she changed her dress to that of another color the nausea left her. Being in a red room or looking at red objects has again and again

had this same effect upon women during child-carrying periods.

"The effect of red upon children has also often been demonstrated. The teacher of a Sunday school infant class found herself and her class in a room with a bright red carpet on the floor. The children were invariably restless and unruly. She happily knew something of the influence of colors, and had the carpet changed to that of a soft green color. The quieting effect upon the children was immediately noticeable.

"An experiment was recently tried upon a child who was given a brilliant red board to play upon. The child was usually good tempered, but before the morning was over he had become cross and irritable. The next morning a green board was substituted, and the child was as serene at midday as at the beginning of his playtime.

"Often have I seen, in my practice instances of the effect of red as it is used for decoration purposes in homes.

"I remember the case of a woman who had a beautiful lamp. The shade was of a superb green, inlaid with a dark, rich red; at night, when the electric light was turned on, the deep Pompeian red of the day was transformed, becoming a brilliant scarlet. She did not know the reason, but often said that this shade, which gave her so much aesthetic pleasure by day, became a positive nerve-irritant in the evening. 'Strange,' she said, 'but I can hardly endure it.'

"A woman recently told me she was going out to dinner where she always dreaded to go. 'I love the friends with whom I am to dine,' she said. 'I enjoy them more than any friends of my entire circle, but I am always relieved when the

meal is over. I may be foolish, but I have sometimes thought it was the color of their dining-room, it is a fiendish red!' I asked her about the health of the family. 'Oh,' she said, 'they are always under the care of a nerve specialist.'

"I know a family who have in their home a red 'den,' a red hall, and red shades over the lights in their various rooms. 'It is so warm and cheerful,' they say in explanation. I asked the woman of this home if so much red ever hurt her eyes. 'No, indeed,' she said, 'what a strange question!' I noticed however that the entire family had eye-trouble, and that they were about the most nervous lot I had ever met."

4. *The Argument from Residues.*

This argument is sometimes used in ascertaining the causes of social phenomena, but its use is mainly confined to scientific investigations. Its nature is sufficiently indicated by the principle upon which it depends, which is as follows:

Subduct from any phenomonon such part as is known by previous induction to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents.

"Complicated phenomena," says Herschel, "in which several causes concurring, opposing, or quite independent of each other, operate at once, so as to produce a compound effect, may be simplified by subducting the effect of all the known causes, as well as the nature of the case permits, either by deductive reasoning or by appeal to experience, and thus leaving as it were a residual phenomenon to be explained. It is by this process, in fact, that science, in its

present advanced state, is chiefly promoted. Most of the phenomena which nature presents are very complicated; and when the effect of all known causes are estimated with exactness, and subducted, the residual facts are constantly appearing in the form of phenomena altogether new, and leading to the most important conclusions."[5]

"It is obvious," says Prof. Minto, "that this is not a primary method of observation, but a method that may be employed with great effect to guide observations when a considerable advance has been made in accurate knowledge of agents and their mode of operation. Many of the new elements in Chemistry have been discovered in this way. For example, when distinctive spectrums have been observed for all known substances, then on the assumption that every substance has a distinctive spectrum, the appearance of lines not referable to any known substance, indicated the existence of hitherto undiscovered substances and directed search for them. Thus Benson in 1860 discovered two new alkaline metals, Caesium and Rubidium. He was examining alkalies left from the evaporation of a large quantity of mineral water from Durkheim. On applying the spectroscope to the flame which this particular salt or mixture of salts gave off, he found that some bright lines were visible which he had never observed before, and which he knew were not produced either by potash or soda. He then set to work to analyse the mixture, and ultimately succeeded in getting them separate. It was of course by the Method of Difference that he ascertained them to be capable of producing the lines that had excited his curiosity."[6]

5. Herschel: *Discourse*, sec. 158.
6. Minto: *Logic, Inductive and Deductive*, p. 332.

5. *The Argument from Concomitant Variations.*

The principle of the argument is as follows:

Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenemenon, or is connected with it through some fact of causation.

"This simple principle," says Minto, "is constantly applied by us in connecting and disconnecting phenomena. If we hear a sound which waxes and wanes with the rise and fall of the wind, we at once connect the two phenomena. We may not know what the connection is, but if they uniformly vary together, there is at once a presumption that the one is causally dependent on the other, or that both are effects of the same cause.

"It must be remembered that the mere fact of concomitant variations is only an index that some causal connection exists. The nature of the connection must be ascertained by other means, and may remain a problem, one of the uses of such observed facts being indeed to suggest problems, for inquiry. Thus, a remarkable concomitance has been observed between spots on the sun, displays of Aurora Borealis, and magnetic storms. The probability is that they are causally connected, but science has not yet discovered how."

The methods of Mill are primarily methods of investigation mostly used by specialists in various departments of experimental science. By these principles alone the advocate may not be able to proceed far in the proof of causes without the aid of observation and experiment, but

he may guard against error in his own argument, and he may point out that his opponents' argument is unsound. Where a thesis is capable of being substantially proved by the application of these principles there is seldom any dispute or need of argumentation. It is only when these principles are not appealed to and cannot be satisfied, where interest, or prejudice, or party spirit is on the side of a causal thesis, and the assertion is made practically without proof, that the knowledge of the requirements of proof becomes practically useful, not in disproving the thesis but in showing that it has not been proved.

Sub-Section II.

TO PROVE GENERAL PROPOSITIONS.

The argument from Example is also used to prove general propositions or principles. This form of the Argument, as commonly expressed consists in citing one or more observed or established facts similar to those summed up in the thesis, the facts set forth as a reason being examples of the general truth which they are cited to prove.

When the relation of cause and effect has been established between two things, as for example, that heat under certain circumstances has caused water to boil in one or more cases, the general proposition that heat under like circumstances will cause water to boil in all cases may be proved by reference to the Law of the Uniform Action of Causes. The argument may be formally expressed as follows:

Thesis: Heat under certain circumstances causes water to boil in all cases.

Reason: Because under those circumstances heat caused water to boil in this case.

Principle: Like causes produce like effects in like circumstances.

It is by means of this argument that all the general truths of science which depend upon causation are established, as for example that arsenic is a poison, that unsupported bodies fall to the ground, that eclipses recur periodically. This form of the argument from Example is seldom expressly used because the extension of a particular fact of causation

to all like cases is easily and readily made; the operation is the basis of nearly all our reasonings and has become from habitual use almost, if not quite, automatic and unconscious. It is usually taken for granted without express statement, so much so, that in arguments which prove only particular facts of causation the conclusion is often stated as a general proposition.

Empirical Principles, that is, general truths that cannot be, or have not as yet been, based on any law of causation, may be proved by a form of the argument from Example, which, as usually expressed, consists in citing several examples. Thus, it may be argued that all horned animals are ruminants, because the ox, sheep, deer, and an indefinite number of other horned animals are ruminants; that all men are mortal because A, B, C, and innumerable other men have died in the past. In an argument of this kind the reason is seldom stated in full, and the principle is seldom stated at all. When the proposition to be proved is expressed or is intended to be understood as universal, the advocate relies on the implied assumptions that no negative example has been found, and that the search has been exhaustive. He is usually content to state a number of positive instances as a sample of all instances that might be given, and thus shift on his opponent the burden of showing an exception, or that the search for exceptions has not been complete.

The principle upon which proof is founded in this form of the Argument from Example is the Law of the Uniformities of Nature which may be expressed as follows:

Whatever has been found to be true in a number of instances

of a phenomenon and never found to be false, after due search, in any instance, is true of all instances whatever.

The complete argument may be stated as follows:

Thesis: All horned animals are ruminant;

Reason: Because A, B, C, and an indefinite number of other horned animals have been found to be ruminant, and no horned animal has been found, after due search, that is not ruminant;

Principle: Whatever has been found to be true in a number of instances of a phenomenon, and never found to be false, after due search, in any instance, is true of all instances whatever.

The following argument from Example is taken from a speech by Alexander Hamilton Stephens:

"As I have stated, the truth of this principle may be slow in development, as all truths are and ever have been, in the various branches of science. It was so with the principles announced by Galileo. It was so with Adam Smith and his principles of political economy. It was so with Harvey and his theory of the circulation of the blood; it is stated that not a single one of the medical profession, living at the time of the announcement of the truths made by him, admitted them. Now they are universally acknowledged. May we not, therefore, look with confidence to the ultimate universal acknowledgment of the truths upon which our system rests?"

The number of instances required for proof varies with our experience of the particular subject-matter. In some cases thousands of instances may be insufficient, and in others one may be enough. If the relation of cause and

effect has been established, we may conclude from one instance to all of a similar kind, and in proportion as we have reason from our experience of the subject-matter to think there is a causal connection, the fewer instances will suffice; and, conversely, in proportion as we have no reason to suppose that there is any causal connection do we need a very large number of instances. Even a large number of positive instances is not sufficient, unless, in addition, we have found no negative instances or exceptions, and have reason to think from a wide experience that, if any existed, we should have found them or known of them.

Thus, from observing a field containing thousands of blue hyacinths we would not from that alone be justified in arguing that all hyacinths were blue, not only because our experience gives no warrant for supposing any causal connection between hyacinths and a blue color, but also because it cannot be said that our search has been sufficiently wide, and that no instances to the contrary have been found. But we may argue that all crows are black, since, although we have not here any reason to suppose a causal connection, yet our experience has been wide and uncontradicted, and if any exceptions existed we should probably have known of them.[6]

On the other hand we might be justified in arguing that the price of protected manufactures tends to decline from a comparatively small number of instances, if we had reason to suppose that protection was a causal factor inducing

6. Fowler: *Inductive Logic*, p. 125.

competition, increased production, cheaper methods, and consequent declining prices.[7]

Laws of nature and other scientific truths, which may be proved deductively by reference to simpler and more comprehensive laws, or directly by reference to the principle of the Uniform Action of Causes, may also be proved by reference to the principle of this form of the argument from Example, as, for instance, the price of food tends to increase with the increase of population; the average price of commodities is determined by the cost of the production of gold; as wealth increases prices tend to decline.

But empirical laws, that is, those that cannot be explained by reference to any known cause, or that cannot be deduced from more comprehensive laws, can only be proved by this form of the argument from Example, as for instance, that all men are mortal; that all horned animals are ruminant; that alloys of different metals are harder than any of their various elements; that substances containing a very high proportion of nitrogen are powerful poisons; that gases have a strong tendency to permeate animal substances. "Any uniformity," says Professor Bain, "not coming under causation must stand on its own independent evidence; and this evidence is uniform agreement throughout the whole compass of observation. We must find it true in all times, all places, and all circumstances; and provided our search has been so extensive, that if there were any exceptions we should light upon them, and no exceptions

7. Minto: *Logic, Inductive and Deductive*, p. 281.

have been found, we are entitled to declare it a law of all nature."[8]

Many principles which have now been shown to be based on causation were formerly held to be true on the grounds of uniformity of experience alone, as for example, the law that eclipses recur periodically, that unsupported bodies fall to the ground.

It is held by Mill and Bain that mathematical axioms and so-called necessary truths may be proved by reference to the principle of this argument, as for example, things which are equal to the same thing are equal to one another; two straight lines cannot enclose a space; if equals be added to equals the sums are equal; the whole is greater than its part. "It is," says Professor Bain, "by agreement through all Nature that we prove that 'things equal to the same thing are equal'; having found this fact always true, never false, we extend it, by the Inductive hazard, to all cases whatsoever."[9]

Propositions that are not expressed nor intended to be understood as universal, but only generally or in most cases, may be proved by a form of the argument for example, the principle of which may be stated as follows:

"*Whatever has been found to be true in most cases in our experience is gen. rally true, or will continue to be found true in most cases.*"

Thus we may argue from this principle that evil com-

8. Bain: *Logic, Deductive and Inductive*, p. 244.

9. Bain: *Logic, Deductive and Inductive*, p. 240; Mill: *System of Logic*, p. 168.

munications corrupt good manners; that extravagance leads to ruin; most springs contain mineral substances; most stratified formations contain fossils; most wood is lighter than water; most persons of a particular age, profession or country have such and such qualities.

In actual argumentation individual instances are not always given to support a general proposition. The mere statement of the proposition is an implied appeal to those addressed to consult their own experience for evidence of its truth. Every general proposition includes, or purports to include, observed instances as well as others unobserved, the former being the evidence for the latter; so that when the proposition is stated, it is, so to speak, half proved. Sometimes the appeal is expressly made to common observation, as in the following examples:

"Is the fact not indisputable that all essential objects of consumption affected by the tariff are cheaper and better since the Act of 1824 than they were several years prior to that law? I appeal for its truth to common observation, and to all practical men. I appeal to the farmer of the country whether he does not purchase on better terms, his iron, salt, brown sugar, cotton goods, and woollens, for his laboring people? And I ask the cotton-planter if he has not been better and more cheaply supplied with his cotton-bagging?"[10]

"We cannot conceive a line without breadth; we can form no mental picture of such a line; all the lines which we have in our minds are lines possessing breadth. If any

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10. Henry Clay: *Speech on the American System.*

one doubts this, we may refer him to his own experinece. I much question if any one who fancies that he can conceive what is called a mathematical line, thinks so from the evidence of his consciousness."[11]

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11. Mill: *System of Logic*, p. 169.

SECTION II.

ARGUMENTS FROM ANALOGY.

The word analogy means any degree or kind of resemblance between two things. There is an analogy between things whenever we can say they are alike in one or more particulars. Two things may resemble each other in so many respects as to be indistinguishable, and differ only in being distinct things, as two coins from the same die; or they may be alike in many things and differ in many things, as two men or two planets, or they may be alike in only one or a few particulars and differ in an indefinite number. An elephant is like a fish in having a backbone; a man is like a tree in having life; and in each case there may be said to be an analogy between the things compared.

The word analogy is also used to mean a resemblance, equality or identity of relations. Thus the relation between a plant and a seed is like that between a chick and an egg; the relation between a country and its colonies is analogous to that between a mother and her children; the relation between a board of directors of a bank and its management is similar to that between the members of the cabinet and the governing of a country; the relation or ratio between two and four is similar or equivalent to the relation or ratio between eight and sixteen.

An argument from Analogy is one in which points of resemblance between two things or two relations are set forth as evidence to show that the resemblance extends further than is actually known or observed; that some fact

or property that is known to belong to one, belongs also, by virtue of that resemblance, to the other; as when we argue that a given specimen of handwriting, A, was written by a certain person, because it resembles in various essential particulars another specimen of handwriting, B, which is known to have been written by that person. The principle relied on in arguments from Analogy may be stated as follows:

Whatever is true of a thing is true of whatever essentially resembles it.

The argument when expressed in full would be as follows:

Thesis: This specimen of handwriting, A, was written by the defendant.

Reason: Because this specimen of handwriting, B, has been proved to have been written by the defendant, and specimen A essentially resembles it.

Principle: Whatever is true of a thing is true of whatever essentially resembles it.

In the same way we may argue that a particular play or part of a play was written by Shakespeare by reason of its resemblance in particular qualities of style to Shakespeare's known works; or that a given painting is the work of Raphael because it is essentially like the known work of that painter; or that government control of the telegraph service would be successful because it is essentially similar to the postal service and that has been successful under government control.

The value of an argument from Analogy depends on the number and extent of the resemblances compared with the number and extent of the differences, and the number of

properties or particulars as to which it is not known whether the two things compared agree or differ. Moreover, of all possible points of resemblance or of difference, only those should be considered which are essential, that is, which have a direct bearing on the proposition to be proved. The question what facts are essential depends on our experience of the particular subject-matter.

It is sometimes said that no thesis can be proved conclusively by analogical evidence. In many cases, it is true, in which the argument is employed it is impossible to show essential resemblance, and, of course, the thesis cannot be asserted as more than probably true. Thus, in the argument that Mars is inhabited because of its many points of resemblance to the earth, there are so many essential points of difference, and so many points as to which it is unknown whether the two resemble or not, that the thesis cannot be said to be more than probably true. To justify a probable conclusion there must be more points of resemblance than of difference, and the points as to which we do not know whether the two things compared agree or differ should be considered as points of difference.[7]

The principle on which we rely in using a probable argument from Analogy may be stated as follows:

When two things resemble in a preponderating number of essential particulars what is true of one is probably true of the other.

On the other hand, if essential resemblance can be shown in all respects, if, in other words, the analogy is

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7. Minto: *Logic, Inductive and Deductive*, p. 368.

complete, the argument may be conclusive as any other. Take, for instance, the case of handwriting; two specimens may be so clearly alike, and display so many individual characteristics that the inference of a common authorship cannot be resisted. We are constantly drawing inferences of this kind in regard to handwriting with which we are familiar, inferences which could not be made more certain by direct testimony as to authorship.[8]

In an argument depending on the resemblance between things there are two terms to the comparison. When the resemblance is between two relations there are four terms to the comparison, two terms in each relation; and when an analogy exists between two relations they are said to be on "all fours," or to be parallel cases.

The following is an example:

"To say 'there is a tide in the affairs of men' is to use a mere metaphor, the subjects compared being totally distinct. Now, to reason from one subject to another of a different kind, might be called reasoning by Analogy; yet, the inference might be such as to deserve the name of induction. Great as is the difference between the march of human history and the flow of the tides, still, if the two phenomena exactly resembled in the single feature of ebbing and flowing, and if no inference were drawn except what this feature involved, the argument would be a sound and strict induction."[9]

The following argument from Analogy taken from a

8. See Mill: *System of Logic*, p. 393.

9. Bain: *Logic, Deductive and Inductive*, p. 371.

speech of Carl Schurz was used to prove that the spoils system entails waste, dishonesty, and inefficiency, and should be abolished.

"Imagine a bank, the stockholders of which are divided into two factions,—let us call them the Jones party and the Smith party, who quarrel about some question of policy. The Jones party is in control but the Smith men persuade over to their side a sufficient number of Jones men to make a majority. The new Smith board at once remove all the officers, president, cashier, tellers, bookkeepers, and clerks, down to the messenger boys—the good and the bad alike—simply because they are Jones men, and fill their places with new men selected, not on the ground of fitness, but simply because they are Smith men. You might watch the proceedings of such a bank with intense curiosity, but, I ask you, what prudent man would deposit his money in it, or invest in its stock? And why would you not? Because you would think this is not sensible men's business, but foolish boy's play; that such management would result in reckless waste and dishonesty. Such would be your judgment, and in pronouncing it you would at the same time pronounce judgment on the manner in which the business part of our national Government has been conducted for several generations."

The following are further examples of analogical arguments:

"Can we conceive of a weaker and flabbier being than a man growing to maturity in a State which had removed all temptation to evil? The success of the Prohibitionists in their efforts to enact local-option laws, which, as admitted

by them, are only a stepping-stone to absolute Prohibition, would put and keep swaddling clothes upon humanity until, from constriction, it must finally perish. Teach a child in infancy to use properly its muscles as well as its brain, and a foundation for self-development, self-reliance, and self-control is laid. Put its body into a steel-and-leather jacket—which would do for that body what the Prohibition law would do for the will—and you will make the child sit up straight at once, but it won't amount to much in the long run. Better teach that child to sit up with the aid of its own backbone. That is the principle upon which the future of the race will be built. As Goethe has truthfully said, the best government is that which teaches us to govern ourselves."[10]

The argument from Analogy is commonly employed in conjunction with other arguments for the purpose (1) of showing the antecedent probability of a fact which is afterwards established by other evidence; (2) of illustrating and confirming a proposition or argument that has already been stated; or (3) of holding up to ridicule, execration or contempt an opponent's conduct or policy. In the following example an argument is illustrated by an analogy:

"It is surprising that John Mill, for instance, having explained the love of virtue as the love of pleasure in disguise, does not seem to have realized the effect of such a theory upon any person who should happen to close with it. Mill seems to have assumed that the love of virtue confronted by this explanation of itself, would remain passive under

10. Gustave Pabst, *Cosmopolitan Magazine*, April, 1908.

the operation, and retain the place and character it had before. Plainly it would do no such thing. The moment I understand that what I am really aiming at is not virtue, as I previously supposed, but pleasure, all my delusions about the supereminence of virtue will, if I am true to my convictions, give place to an entirely different order of desire. I dreamt that I was in a palace: you have now awakened me to the truth that I am in a stye; and being awake you cannot expect me, as a rational being, to play at believing that my acorns are pearls and my wash the nectar of the gods."

In the celebrated case of Massy against the Marquis of Headfort, Bartholomew Hoar, for the plaintiff, made use of the following analogy, the purpose of which is obvious:

"The Cornish plunderer, intent on the spoil, callous to every touch of humanity, shrouded in darkness, holds out false lights to the tempest-tost vessel, and lures her and her pilot to that shore upon which she must be lost forever—the rock unseen, the ruffian invisible, and nothing apparent but the treacherous signal of security and repose. So, this prop of the throne, this pillar of the State, this stay of religion, the ornament of the Peerage, this common protector of the people's privileges and of the Crown's prerogatives, descends from these high grounds of character to muffle himself in the gloom of his own base and dark designs; to play before the eyes of the deluded wife and the deceived husband the falsest light of love to the one, and of friendly and hospitable regards to the other, until she is at length dashed upon that hard bosom where her honor and happiness are wrecked and lost forever."

In the following passage the Rt. Hon. Herbert Henry Asquith ridiculed his opponents' policy by means of analogies.

"When we ask how I am going to meet German competition, which I admit to be a formidable obstacle in the way of British trade, I reply, not by taking down from its dusty shelf in the political museum the old blunder-buss of tariff retaliation, which is as likely as not to explode in your own hands, but by imitating Germany's vastly superior system of secondary and technical education, by taking up the weapons of precision which science has forged, which the British people as well as the German people can be taught to handle, and which in truth, are the arms of quick firing and of long range in the industrial campaigns of to-day."

The argument from Analogy is often more effective than other arguments even where other arguments could be used, as it is more picturesque, and illustrates the abstract by the concrete; the less known and the unknown by what is familiar; that which is difficult to picture by what is easy to picture. It would be easy to prove the truth of the proposition that the spoils system leads to inefficiency by other arguments besides analogy, but the comparison used by Schurz brings it home to the average citizen, who is more familiar with the conduct of business concerns than with the intricacies of the Civil Service.

The argument from Analogy is the central type from which all other arguments radiate, and with which they are all connected. There is an analogical element in every process of reasoning whether of inference or argumentation. "The fundamental action of our reasoning faculties," says

Jevons, "consists in inferring or carrying to a new instance of a phenomenon whatever we have previously known of its like, analogue, equivalent or equal. Sameness or identity presents itself in all degrees, and is known under various names; but the great rule of inference embraces all degrees, and affirms that *so far as there exists sameness, identity or likeness, what is true of one thing will be true of the other.*"[11]

The distinction between an argument from Analogy and most other forms of arguments is that in Analogy the proof does not profess to be rested on any known causal connection between the fact to be proved and the points of resemblance, but merely on the facts of resemblance from which a causal connection is inferred in order to account for the fact in question.

"By experience, facts or events of the same character are referred to causes of the same kind; by analogy, facts and events similar in some, but not in all of their particulars to other facts and occurrences, are concluded to have been produced by a similar cause: so that analogy vastly exceeds in its range the limits of experience in its widest latitude, though their boundaries may sometimes be coincident and sometimes indistinguishable."[12]

In mathematical reasonings, where the relation of cause and effect is not directly involved, analogy is peculiarly applicable and useful, as well as conclusive. If it be proved that the three angles of a given triangle are equal to two right angles we extend that fact by analogy to all triangles,

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11. Jevons: *Principles of Scien ?*, p. 9.

12. Wills: *Circumstantial Evidence*, p. 14.

because although the differences between triangles are infinite, yet having regard to the steps in the proof of this question all triangles are essentially the same.

All arguments may be expressed in the form of an argument from Analogy, and every argument from Analogy may be expressed in some other form if, or as soon as, some causal connection has been established between the fact in question and the similar properties of the things compared.

"Analogical reasoning may be reduced to the following formula: Two things resemble each other in one or more respects; a certain proposition is true of the one; therefore it is true of the other. But we have nothing here by which to discriminate analogy from induction, since this type will serve for all reasoning from experience. In the strictest induction equally with the faintest analogy we conclude because A resembles B in one or more properties, that it does so in a certain other property. The difference is that in the case of a complete induction it has been previously shown by due comparison of instances, that there is an invariable conjunction between the former property or properties and the latter property; but in what is called analogical reasoning, no such conjunction has been made out."[13]

In one class of arguments from Analogy, the resemblances may be (1) in the nature of effects, and the resemblance such as to suggest a derivation from the same cause or from similar causes, as when we argue that two resembling specimens of handwriting or of composition are by the same

13. Mill: *System of Logic*, p. 393.

author; or (2) the resemblances may be in the nature of causes, and the resemblances such as to suggest that like effects will follow or have followed, as when we argue that there will be a revolution in Russia because the conditions in that country are similar to those which produced a revolution in France in 1789; or that Mars is inhabited because the conditions by which life is sustained on that planet are similar to those on the earth; or that Government control of the telegraph and telephone services will be successful because the general conditions of those services are similar to those of the postal service which has been successful under government control. In these cases we base the argument in experience, and make an approach to get the support of a natural law based on causation.

In another class of arguments from Analogy we base the argument in experience, but the relation of cause and effect has no application, as when we argue that the three angles of every triangle are equal to two right angles because every triangle, having regard to the steps in the proof, is essentially similar to this triangle of which that fact has been proved. In a third class of arguments from Analogy we reach conclusions without the aid of the law of Causation or of experience as when we extend a juridical or other conventional law to parallel cases or analogous classes of facts. The argument is founded in Authority, rather than in Experience. In matters of politics and legislation arguments to establish new principles are constantly being made from the analogy of parallel cases, that is, by the evidence of identical or essentially similar relations.

In jurisprudence, analogy which may be a source of danger

in its infancy is, according to Sir Henry Maine, the most valuable of instruments in its maturity in extending and developing legal principles. A principle laid down either by statute or precedent is by analogy extended to cover all cases that are essentially similar.

The argument from Analogy sometimes resembles the argument from Example, as when we argue that a law prohibiting the liquor traffic will work well in Ohio because it has worked well in Maine, Kansas and Iowa, and is hence sometimes called an inductive argument. Such an argument, however, is analogical, as it depends on the implied assumption that Ohio is essentially similar to the other States mentioned, and not on the absence of exceptions after due search, which is the foundation of the Argument from Example.

An argument from Analogy is useful and important as suggesting a probable conclusion, and preparing the way for its establishment by other arguments, or as suggesting the existence of a law or principle which may be verified on further investigation. Thus, the establishment of the wave theory of sound suggested and led to the establishment of the wave theory of light. A thesis may be disproved as well as proved by an argument from Analogy, by showing that the points of difference outweigh the points of resemblance; thus, a bank note may be proved to be a counterfeit by showing points of difference between it and one that is known to be genuine.

SECTION III.

ARGUMENTS FROM CAUSE TO EFFECT.

In an argument from Cause to Effect the existence and operation of a known cause is given as a reason to prove an effect; as when we argue that a man will die because he is afflicted with a particular disease; or that a man in disease will be cured by taking a particular medicine, or by following a prescribed course of treatment; or that an eclipse of the sun will occur next month from the known position and movements of the earth and moon. The argument is often expressed in a hypothetical form and is made to rest on a supposed cause; as when we argue that the crops will be destroyed if it continues to rain. Prediction, when more than a random guess, is based on a cause, either actually existing or supposed.

In the process of inference from cause to effect, the problem may be stated thus: given a certain state of facts, what will be the outcome? What result will naturally follow? What will be the effect? If we make this treaty, pass this law, what will be the consequence? If we adopt a protective tariff, will it result in over-production, declining prices and stagnation? or will it stimulate industry, induce competition, provide more employment for labor and an enlarged home market? Having reached a conclusion we argue the truth of it by setting forth the circumstances which constitute the cause or chain of causes from which the inferred effect will follow. Thus, Macaulay in his speech on the Reform Bill argued that the causes then operating,

unless counteracted by the passing of the bill, would produce a revolution.

In the same way we may argue from the habits, character or temperament of a man we know, that he will probably act in a certain way under given circumstances; or from the emotions, passions and appetites which all men have in common to actions which such motives tend to produce.

An argument from cause to effect may be probable only, since the operation of a cause is liable to be frustrated or counteracted, in whole or in part, by other agencies; and it approaches to conclusiveness in so far as it can be shown that no other agency is operating, or will operate to prevent the effect. The assumptions, which, although seldom expressed, are nevertheless relied on and required to give validity to the argument, are, that the fact given as a reason has been found under similar circumstances to be adequate to produce the alleged effect, that no counteracting causes are operating or will operate to prevent it, and that the cause will be followed by the effect in this case as in former cases, or in other words, that like causes produce like effects in like circumstances. The advocate is usually content to state the fact or facts which constitute the cause without reference to the implied assumptions. This has the effect of shifting on his opponent the burden of disputing either the truth of the facts alleged, or of showing that they are not an adequate cause of the effect, or of showing the operation of counteracting causes.

The argument may be stated in full as follows:—Thesis: A will die; Reason: Because he has been bitten by a cobra, the bite of a cobra having been found to be an adequate cause of death which cannot be counteracted; Principle:

Like causes produce like effects in like circumstances. An argument may often be stated more simply by using as a principle the law of the particular cause, thus:—Thesis: A will die; Reason: because he has been bitten by a cobra; Principle: All who are bitten die.

A probable argument from Cause to Effect may be stated by using a principle expressing a tendency. For example:—

T. It is not likely he will be eloquent;

R. Because his habits are secluded;

P. Secluded habits do not tend to eloquence.

The following extract printed during the progress of the Russo-Japanese war contains an argument in favor of an early peace, by pointing out the causes which would naturally have that effect.

"Clearly Russia is drifting rapidly into a position so dangerous that a sudden armistice need not surprise anyone at all acquainted with her present situation. An army of three-quarters of a million has been reduced to one of less than half that total through disasters in battle, deaths from disease, and the capture of prisoners by the victorious Japanese. A moderately sized loan is found extremely difficult to float in France, not merely a friend but an ally, while Japan has easily raised in Britain and America enough to enable her to carry on the war for a year or more to come, The Russian people are tired of the war, unwilling to serve in it, and disaffected politically towards the Government which is forcing the fighting, while the Japanese people are enthusiastically unanimous in support of their Government, and are not merely ready but eager to join the armies in the field. The Russian forces are shattered and disheartened by

a long succession of defeats, while the Japanese soldiers are absolutely confident in their ability to win in every encounter. All this spells an early peace."

The argument from Cause to Effect is used to prove not only particular effects but general effects as flowing from the operation of general causes. The following is an example:

"If labor becomes more efficient, whilst the wages of the laborers and the price of food remain unaltered, the cost of labor will be diminished. If the wages of the laborers are reduced, whilst there is no change in the efficiency of labor and the price of food, the cost of labor will be diminished. The cost of labor will also be diminished if the price of food is reduced, and the amount of the laborers' wages, estimated by the commodities they will purchase for him, remains unchanged. If, therefore, the cost of labor, or, in other words, the rate of profit, varies in different countries from time to time, the variations must be due to the influence of one or more of the three circumstances above enumerated."[14]

The following is a further example:

"It is important to direct attention to the great influence exerted upon profits and wages by the export of capital. It has already been shown that the rate of profit may be regarded partly as the cause, partly as the effect, of the amount of capital accumulated. An increase in capital tends *coeteribus paribus* to lower the rate of profit; whereas an advance in the rate of profit promotes the accumulation of capital. It is however essential to bear in mind that only a portion of the aggregate wealth which is annually saved in

14. Fawcett: *Political Economy*, p. 174.

any country is invested in its own industry; the remainder is exported to be employed as capital in other countries. Hence the capital annually saved in such a country as England is divided in two portions; that portion which is exported and that portion which is employed in its own industry. That portion which is exported produces no immediate effect upon the current rate of wages and profit prevailing in England. Consequently in all discussions relating to wages and profits, it is important not only to consider the whole amount of capital annually saved, but particular attention must be directed to the portion of this aggregate capital which is retained for home investment. It is evident that the relative magnitude of the two portions into which a nation's capital is thus divided will be regulated by the profits which are respectively realized by home and foreign investments. If a rise in the rate of profit abroad should be unaccompanied by an advance in the rate of profit at home, an influence is at once brought into operation to increase the relative amount of the capital which is exported and consequently to diminish the amount retained for home investment. Although, therefore, there is no diminution in the national capital, yet as a smaller amount is employed in home industry, the effects that ensue will, in many respects, be analogous to those which occur if the amount of wealth annually saved were diminished. This is particularly the case with regard to wages, which, depending upon the amount of circulating capital, must evidently be regulated, not so much by the whole amount of capital annually saved, as by the amount which is retained for home investment. It will be very necessary to bear this

in mind when considering the various expedients which are resorted to for raising wages. It may here be generally said that an advance in wages unaccompanied by any increase in the efficiency or productiveness of labor, can seldom confer a permanent benefit upon the laborer. Such an advance in wages will lower the rate of profit at home; a greater proportion of the national capital will therefore be invested abroad and the amount spent in wages will be decreased."[15]

The following argument shows the connection between general causes and remote effects through intermediate causes and effects:

"The public has yet to learn the paradox that mental disease is physical disease. The causes that produce physical disease in stomach, or lung, or heart may produce physical disease in the brain, and the expression of that physical disease is mental disease or insanity. The overwhelming majority of cases of insanity depend absolutely upon the circulation of some poison or other in the blood. Of these poisons the most important is alcohol. Scarcely less effective are the poisons or toxins produced by many other forms of lowly plant life which we know as bacteria. These poisons produce physicial changes in the brain upon which the insanity depends. The doctrine that worry, as such, can produce mental disease is unintelligible to any one acquainted with these matters.

"Nevertheless, we can state the facts in a more rational form. We begin by reiterating that, contrary to opinion, overwork, as such, can not cause insanity, but can do so only

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15. Fawcett: *Political Economy*, p. 178.

by first causing worry. We must then proceed to say that worry, as such, can not be conceived to cause insanity, and, in point of fact, does not cause insanity. (I am now using the word in its common use, to indicate the really grave forms of mental disease.) But worry has its ways and means by which it can and does cause insanity; they are only too easily enumerated, and only too abundantly illustrated in common experience. In the first place, worry is a potent cause of insanity because it leads to the use of drugs, and especially alcohol. Alcohol stands out far beyond any other one factor as a cause of insanity, and worry is responsible for an enormous amount of drinking. Indirectly, then, worry is a terribly common cause of insanity, and any success that may conceivably attend our study of it will be, in its measure, success in attacking one of the most appalling problems of our civilization.

"Again, worry is a most potent foe of sleep, and lack of sleep is a most potent foe of sanity. I am sometimes inclined to think that the importance of sleep in preserving the mental health has been exaggerated by some writers. We know that before an attack of acute mania, only too often resulting in murder and suicide, a man commonly passes several sleepless nights. The sleeplessness is not a cause of his madness, however, but an early sympton of it. I am, indeed, inclined to think that physical health suffers more than mental health from lack of sleep, as such, but if the lack of sleep depends upon worry, and, still more, if drugs are resorted to in order that sleep may be obtained, the cause of the worry not being removed, then certainly we have a potent factor in the production of insanity. Though lack of sleep

in itself is insufficient, I believe, to cause insanity—as is surely proved by the countless bad sleepers who do not lose their mental health—yet it is certainly a most important contributory factor in the production of insanity, in that it makes the brain far more susceptible that it would otherwise be to the action of such poisons as may beset it. In a word, it lowers brain resistiveness. The use of alcohol and other drugs, then, and interference with sleep, constitute most frequent and effective means by which worry leads to mental disease of the graver kinds."[16]

The following is an argument from Cause to Effect based on a cause or set of causes which are largely hypothetical:

"The millions of Asia, already forming half the population of the earth, and growing much more rapidly than the whites, will continue to claim, and will in the end secure, either equality in the white sphere or monopoly in their own. If brown and yellow men are to be excluded from the four continents either occupied or controlled by the white people, then white enterprise and rule will be driven in the long run from the yellow continent. There would be inevitable justice in that consummation. First of all, an economic grievance would provoke economic retaliation of a more and more systematic kind. The sentiment of *swadeshi* would spread to China with the fixed purpose of punishing the white races by excluding their goods from all Asiatic markets. Whether high tariffs were thrown round those markets or not, their industrial development might lead to an increase of population, of financial power, and of offensive strength at

16. Dr. C. W. Saleeby, *Canadian Magazine*, March, 1908.

sea far greater than the utmost possibilities hitherto considered in these speculations. Consider the astonishing growth of the population of Great Britain or Germany since these countries came to rest largely upon an industrial basis. Then remember that nearly all Asia is still upon a purely agricultural basis, yet even now contains eight hundred millions of people. Let the sense of the common grievance rise steadily and dominate; let it be asserted that there shall be white men's countries in every other continent, but that brown and yellow men, no matter how much they increase or how far they progress, shall never have any countries but their own; let the conception of Asia *contra mundum* gradually arouse all its races for a colossal crusade; let Japan be invoked by China as a leader, and by India as a liberator; and let the black races feel that the white man is like to be swept back at last; and then indeed the strangest dreams of the eclipse and extinction of Western civilization might come true."

The following is a series of arguments from Cause to Effect to prove that the increase of intelligence causes the prolongation of the period of infancy, and that the prolongation of the period of infancy is a condition of progress and of the development of the family and of communities:

"For every action of life, every adjustment which a creature makes in life, whether muscular adjustment or an intelligent adjustment, there has got to be some registration effected in the nervous system, some line of transit worn for nervous force to follow; there has got to be a connection between certain nerve centres before the thing can be done, whether it is the acts of the viscera or the acts of the limbs,

or anything of that sort; and of course it is obvious that if the creature has not many things to register in his nervous system, if he has a life which is very simple, consisting of a few actions that are performed with great frequency, that animal becomes almost automatic in his whole life; and all nervous connections that need to be made to enable him to carry on life get made during the foetal period, or during the egg period, and when he comes to be born, he comes all ready to go to work. As one result of this, he does not learn from individual experience, but one generation is like preceding generations, with here and there some slight modifications. But when you get the creature that has arrived at the point where his experience has become varied, he has got to do a good many things, and there is more or less individuality about them; and many of them are not performed with the same minuteness and regularity, so that there does not begin to be that automatism within the period during which he is being developed, and his form is taking on its outlines. During prenatal life there is not time enough for all these nervous registrations, and so by degrees it comes about that he is born with his nervous system perfectly capable only of making him breathe and digest food,—of making him do things absolutely requisite for supporting life; instead of being born with a certain number of definite developed capacities, he has a number of potentialities, which have got to be roused according to his own individual experience. Pursuing this line of thought, it began after a while to seem clear to me that the infancy of the animal in a very undeveloped condition, with the larger part of his faculties in potentiality, rather than actuality, was a direct

result of the increase of intelligence, and I began to see that now we have two steps; first, natural selection goes on increasing the intelligence; and secondly, when the intelligence goes far enough, it makes a longer infancy, a creature is born less developed, and therefore there comes this plastic period during which he is more teachable. The capacity for progress begins to come in, and you begin to get at one of the great points in which man is distinguished from the lower animals, for one of those points is undoubtedly his progressiveness; and I think that any one will say, with very little hesitation, that if it were not for our period of infancy we should not be progressive. If we came into the world with our capacities all cut and dried, one generation would be very like another.

"Then, looking round to see what are the other points which are most important in which man differs from the lower animals, there comes that matter of the family. The family has adumbrations and foreshadowings among the lower animals, but in general it may be said that, while animals lower than man are gregarious, in man have become established those peculiar relationships which constitute what we know as the family; and it is easy to see how the existence of helpless infants would bring about just that state of things. The necessity of caring for the infants would prolong the period of maternal affection, and would tend to keep the father and mother and children together. This business of the marital relations was not really a thing that became adjusted in the primitive ages of man, but has become adjusted in the course of civilization. Real monogamy, real faithfulness of the male parent, belongs to a comparatively

advanced stage; but in the early stages the knitting together of permanent relations between mother and infant, and the approximation toward steady relations on the part of the male parent, came to bring about the family, and gradually to knit those organizations which we know as clans.

"Here we come to another stage, another step forward. The instant society becomes organized in clans, natural selection cannot let these clans be broken up and die out,—the clan becomes the chief object or care of natural selection, because if you destroy it, you retrograde again, you lose all you have gained; consequently those clans in which the primeval selfish instincts were so modified that the individual conduct would be subordinated to some extent to the needs of the clan,—those are the ones which would prevail in the struggle for life. In this way you gradually get an external standard to which man has to conform his conduct, and you get the germs of altruism and morality; and in prolonged affectionate relation between the mother and the infant, you get the opportunity for that development of altruistic feeling, which once started in those relations, comes into play in the more general relations, and makes more feasible and more workable the bonds which keep society together, and enable to unite on wider and wider terms."[17]

The argument from Cause to Effect cometimes called the gument *â priori*, or from antecedent probability, is classed a deductive argument, especially when general effects are ablished by reference to general causes.

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17. John Fiske: *Century of Science*, p. 106.

SECTION IV.

ARGUMENTS FROM EFFECT TO CAUSE.

We argue from effect to cause when the existence of an effect and the circumstances surrounding it, are given as a reason to prove the existence and operation of a cause,—some fact, circumstance, or agency that is known to be adequate and exclusively sufficient to produce that effect. In the process of inference from effect to cause, the problem is: Given a certain effect, what has brought it about, what in accordance with known laws of nature would produce it, how is it accounted for or explained? A house has been set on fire, or wrecked by some explosive, who or what was the cause? A person is found dead, what was the cause of death? Having reached a conclusion we argue the truth of it by setting forth the effects and the circumstances in which it is found as a reason, to prove the existence of a cause which alone could have produced it.

Such an argument may be only probable since the same effect may be produced by two or more causes, and it approaches to conclusiveness in so far as all the causes but the one in question, can be shown not to be operative, or in so far as the effect or set of effects is peculiar to the cause to be proved. Thus, when we say it has rained because the streets are wet, we argue from an effect (the wet streets) to a cause that is known to be adequate to produce that effect (rain), and the argument is conclusive in so far as it can be shown that rain is the only cause that could have produced the effects observed, or that no other cause operated which

might have produced the effect, such as a heavy dew, melting snow, the sprinkling cart, the bursting of a watermain, etc.

If an effect can be due to only one cause the existence of that cause may be proved conclusively by the existence of the effect. Thus, from the fact that ice is forming we may argue conclusively the existence of a temperature of 32 degrees Fahrenheit or lower, since such a temperature alone is adequate to produce the effect.

In like manner, from the existence of an effect we may argue the existence of an indispensable condition of that effect, although such condition may have no tendency to produce the effect. Thus, from the fact that a man died to-day it may be argued that he was alive yesterday.

We argue the existence of a glacial period, or Ice Age, from the facts that over nearly the whole of the American continent north of the 40th degree of north latitude, rock surfaces have been ground and polished, great boulders have been carried long distances from the mother ledges or formations where they evidently were first formed, and the general topography of the country has rounded outlines. Effects like these have been produced by the movement of ice masses in our own day, and as far as our experience goes are not produced by any other agency.

The following is a further example of an argument from Effect to Cause:

"There is a salamander which differs from most other salamanders in being exclusively terrestrial in its habits. Now, the young of this salamander before their birth are found to be furnished with gills, which, however, they are never destined to use. Yet these gills are so perfectly formed,

that if the young salamander be removed from the body of their mother shortly before birth, and be then immediately placed in water, the little animals show themselves quite capable of aquatic respiration and will swim merrily about in a medium which would drown their own parent. Here, then, we have both morphological and physiological evidence pointing to the possession of gills by the ancestors of the land-salamander "[18]

The assumptions underlying an argument from Effect to Cause are that every event has a cause, that the fact to be proved is known to be a condition, or an adequate cause of the effect or set of effects which constitute the reason, and that the fact to be proved is the only cause of those effects, or if not, then, that no other cause operated to produce them. The principle required to validate the argument may be stated as follows:

When any circumstance is known to be adequate to produce a certain effect, that effect having appeared and no other cause having operated to produce it, the effect in question was preceded by that circumstance.

When the law of a particular effect is known, that law may be used as the principle of the argument as in the following example: Thesis: The temperature is at or below 32 degrees; Reason: Because ice is forming; Principle: Whenever ice forms the temperature is at or below 32 degrees.

When an effect for which a cause is sought to be proved may be due to one of two or more causes, the existence of any one cause cannot be proved merely by the effect, but

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18. Romanes: *Darwin and after Darwin*, Vol. 1, p. 102.

the cause which actually operated in producing the effect may be proved by the existence of collateral effects which are due exclusively to that cause. Thus, death may be due to one of various causes, no one of which may be inferred or proved from the mere fact of death. But the cause which actually operated in producing death in any given case may be proved by the existence of collateral effects, which are due to that cause and to no other. If a person came to his death by drowning, there will be found certain collateral effects, froth in the mouth and trachea, water in the stomach, discoloration, etc., which are peculiar to that cause. So, if death were due to poisoning, strangulation, stabbing, shooting, burning, violent blows, disease, or other cause, characteristic collateral effects would be produced from which the cause actually operating may be proved in so far as the effects were peculiar to it, and could not be produced by any other agency.

In cases where an effect may be due to two or more causes, it may be impossible to determine by which cause the effect was produced. Thus, the characteristic effect of strychnine poisoning is intense contraction and rigidity of the muscular system. But this effect is also produced by tetanus or lockjaw, and if no other effect of either cause could be discovered, it would remain in doubt which of the two causes produced the effect. In a *post mortem* examination, not only are the obvious effects of one cause taken into account, but a complete search is made for the effects of other possible causes, and it is only when all causes but one have been eliminated that that cause may be said to be established.

In an argument from Effect to Cause the reason is seldom

stated in full, except in those cases where the effect in question can be due to only one cause. The advocate is usually content to state a probable cause, and shift on his opponent the burden of suggesting or showing other causes to which the effect might be due. If, however, any other cause may have operated, the proof remains incomplete until all other possible causes have been considered and eliminated.

When two things are associated either successively or contemporaneously as independent effects of a common cause, we may infer or argue from one which is observed to the other which is unobserved. Thus, when we say it will rain because the barometer is falling, we argue from an observed effect (the falling of the barometer) to an unobserved effect (rain) which are associated successively as joint effects of a common cause that tends to produce both. So we argue that a man has a certain disease because he has certain symptoms. This argument from one effect to another effect may be regarded as a compound argument from Effect to Cause and from Cause to Effect. It is rarely met with in practice, not from any defect in its validity, but because the joint effects of the same cause are usually open to observation, and argument is then unnecessary.

The arguments from Effect to Cause and from Cause to Effect are sometimes similar to, and are often confused with, arguments from Example to prove the relation of Cause and Effect.

In the argument from Example we are usually concerned with two or more instances. Thus, we may be interested in ascertaining the properties, as yet unknown, of a given substance, circumstance or agency, and proceed by ex-

periment, where that is possible, or by observation of that agent in different combinations, taking care as far as possible to exclude or eliminate all other agencies, and note what follows the introduction or presence of that agent. This process might be called, in a sense, reasoning from cause to effect, as we are at first concerned with something that turns out to be a cause and finally arrive at something which is an effect of that cause. But strictly it is reasoning from one relation to another, from simple sequence of two things to causal sequence, from an observed relation to an unobserved relation. Or again, we may be attracted by a certain effect and become interested in ascertaining the cause, as yet unknown, to which that effect was due. We proceed as before by observation of *similar* effects and note their various antecedents, and eliminate those that are uninfluential, until only one is left; or by experimenting with various antecedents to see if those effects follow. Here the process of reasoning might be called from effect to cause, as we begin with an effect or class of effects and arrive at something which turns out to be a cause of that class of effects. But in reality the process is the same as before, from simple sequence to causal sequence.

In the argument from Effect to Cause we are not concerned with comparing similar instances. We seek to prove the existence of a certain particular fact, circumstance, or agency, by reason of its being *known* to be an adequate cause of the effects observed. The argument proceeds on the assumption that the relation of cause and effect has already been proved between the same kind of facts as those given as a reason and the fact to be proved. Thus, when

we argue that it has rained because the streets are wet, we know by previous experience that rain is an adequate cause of wet streets. When we argue the existence of a glacial epoch in prehistoric times from effects that may now be observed, the ground of the argument is our knowledge that the same kind of effects have been produced by the movement of ice-masses at the present day.

The arguments from Example to prove the relation of cause and effect, on the other hand, proceed on the assumption that the relation of cause and effect has not been established by previous experience, and they depend on comparing instances in which the effect appears and those in which it does not.

The proof of the relation of cause and effect is only possible when the two things said to be so related can be observed in various combinations. The existence of a cause may be proved by the argument from Effect to Cause, although that cause has never been observed and never can be observed.

In reasoning from Effect to Cause the problem is to prove the existence of an unobserved fact. In reasoning from Example the problem is to prove the existence of an unobserved relation between two facts. In the one case, the causal relation between antecedent and consequent has already been established in similar cases; in the other, that relation is sought to be established for the first time.

The argument from Effect to Cause is sometimes called an *à posteriori* argument, that is, an argument from a later to an earlier fact, in contrast to the argument from Cause to Effect which is called an *à priori* argument.

Two other classes of arguments, namely, arguments from Testimony and from Circumstantial Evidence, are special and complex forms of the argument from Effect to Cause. From their wide use and great importance in all relations of life, especially in forensic and scientific questions, a separate section will be devoted to each.

SECTION V.

ARGUMENTS FROM TESTIMONY.

The word testimony means (except when used metaphorically, as when we speak of the testimony of the rocks) the declaration or statement of a witness, made for the purpose of establishing a fact witnessed by him. Evidence is often used to mean testimony. But testimony is a narrower term, and is only one, although a peculiar and important one, of the many classes of facts which are included in the word evidence.

In an argument from Testimony the truth of the fact testified to is argued from the fact that the testimony is given. The assumptions on which the argument is based, and which are necessary to give it validity, are that the fact testified to was observed by the witness, that his memory of it is accurate, and that his testimony is an accurate transcript of his memory. In other words, it is assumed, both in courts of justice as well as in the ordinary affairs of life, that a witness is trustworthy unless the contrary is shown, in much the same way that an accused person is presumed to be innocent until he is proved to be guilty. The principle relied on in an argument from Testimony may be stated thus:

What a trustworthy witness testifies to is true.

The argument may be expressed in full as follows: Thesis: A assaulted B; Reason: Because this trustworthy witness testifies that he observed that fact; Principle: What a trustworthy witness testifies to is true.

That testimony is generally true is derived from our experience of the great preponderance of truth over falsehood in testimony taken as a whole. "Of few persons indeed," says Best, "can it be said that their adherence to truth is undeviating at all times; with many, its observance appears to depend on circumstance, accident, or caprice: with some, the practice of lying seems inveterate; while certain classes of persons systematically, and as it were on principle, withhold the truth from other classes on particular subjects. But after every abatement has been made for aberrations, the quantity of truth daily spoken immeasurably exceeds that of falsehood; and Bentham even goes so far as to assert, that from the mouth of the most egregious liar that ever existed, truth must have issued at least a hundred times for once that wilful falsehood has taken its place."[19]

This general truth which is found in experience is accounted for and confirmed by certain general causes continually in operation, sometimes called sanctions of truth, which tend to promote truth-speaking, and to render it natural and habitual. These causes may be described as the natural, social, religious and legal sanctions of truth.

(1) Man's love of ease and natural aversion to unnecessary effort prompts him to speak truth rather than falsehood, since it is easier to relate from memory than to invent a lie.

(2) Man's happiness and welfare in all social relations—in fact, his very existence in a social state—are dependent upon mutual confidence in one another's word. This confidence would be destroyed if the practice of lying

19. Best: *Evidence*, p. 17.

became general, and is promoted by truth-speaking. The infamy and disgrace attached to the word liar, and the loss of respect suffered by a liar are further inducements to veracity. "We are so constituted," says Wayland, "that obedience to the law of veracity is absolutely essential to our happiness. Were we to lose either our feeling of obligation to tell the truth, or our disposition to receive as truth whatever is told to us, there would at once be an end to all science and all knowledge, beyond that which every man had obtained by his own personal observation and experience. No man could profit by the discoveries of his contemporaries, much less by the discoveries of those men who had gone before him. Language would be useless, and we should be little removed from the brutes. Every one must be aware, upon the slightest reflection, that a community of entire liars could not exist in a state of society."[20]

(3) The religious sanction is founded in the belief, common to all religions, that truth is acceptable, and falsehood abhorrent to the Deity, and that He will, in some way, reward the one and punish the other.

(4) The legal provisions that testimony given before judicial tribunals shall be given under oath, and that perjury is a criminal offence punishable by fine or imprisonment, operate as additional inducements to truth-speaking and constitute the legal sanctions of truth.

The argument from Testimony may be regarded as an argument from an effect to a condition, the giving of the

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20. Wayland: *Moral Science.*

testimony being the effect, and the reality of the fact testified to, being a more or less probable condition of the effect; in other words, it is argued that the testimony would not have been given if the fact testified to were not true. Or it may be regarded simply as an argument from Effect to Cause, the existence of the testimony, and of the impressions in the mind of the witness, being effects of the facts testified to; just as a picture on a photographic plate is the effect of the object to which it is exposed. On the assumption that the witness is trustworthy, the cause or fact witnessed may be proved by the exhibition of the effect, that is, by a declaration in words of the impression made on his mind.

In courts of law a distinction is made between testimony as to matters of fact and testimony as to matters of opinion. Opinion testimony, or, as it is commonly called, Expert Evidence, consists in the statement of a witness made to establish, not a fact observed, but a fact inferred from facts observed by him or others, or from a given or supposed state of facts, in cases where the fact to be established is remote from common knowledge or observation, and the witness has special or expert knowledge, or skill in the interpretation of that class of facts; as, for example, where it is sought to establish the insanity or incapacity of a testator, or the insanity of a person accused of crime, or the effects of various poisons on the human system, etc.

The argument from testimony is in many respects the most important, as it is the most widely used, of all arguments. The greater part of our knowledge of the present as well as of the past is derived from testimony. Arguments in courts of law as to matters of fact are almost wholly

based on testimony. Facts witnessed may be preserved in the memory or in writing for an indefinite time, and the witness or the writing may be brought before those sought to be convinced, whenever convenient or necessary. But for this convenient use of testimony no argument could be made except in presence of the facts themselves, or of those who had witnessed the facts. The argument from testimony is often the basis of all other arguments, the facts which constitute the reason in other forms of argument being usually established for the jury, or those sought to be convinced, by testimony.

The presumption that all testimony delivered under the sanction of an oath, and perhaps without it, ought to be believed until special reasons appear for doubt or disbelief, has the effect of placing the burden of proving a witness to be untrustworthy upon him who disputes the truth of his testimony. This rule, which is found in all systems of jurisprudence, is based on considerations of convenience. In the first place, it would involve a great waste of time if the trustworthiness of every witness had to be affirmatively proved before his testimony should be received. Secondly, if a witness is not trustworthy, that fact may usually be established without difficulty in any given case.

The general grounds upon which the testimony of a witness may be impeached will be discussed in a subsequent chapter.

The argument *ex silentio* is an argument drawn from the absence of testimony or silence of a witness to disprove a fact which, if true, would probably have been mentioned by him. Thus, an argument against the reality of the miracle

of raising Lazarus from the dead, which is mentioned in the fourth Gospel, is often founded on the silence of the other three Gospel writers, who, it is argued, would have known and mentioned such a fact if it had taken place. This is a negative argument from Effect to Cause, or rather from the absence of an effect to the absence or non-existence of a cause, which, if it existed, would probably have produced the effect. Standing alone, this argument is of little value, but, taken in connection with other facts, it might form an important part of an argument from Circumstantial Evidence.

SECTION VI.

ARGUMENTS FROM CIRCUMSTANTIAL EVIDENCE.

In the argument from Circumstantial Evidence, the reason consists of a number of facts or circumstances any one of which may be insufficient for proof, and taken by itself, may have little evidential force, but all of which, taken together, form a body of evidence that is often as strong and convincing as the direct testimony of witnesses.

In jurisprudence, the term Circumstantial Evidence is commonly used in contradistinction to testimony, and is employed to mean any facts or circumstances from which a given fact is inferred, or by which a given thesis is proved, other than the testimony of a witness. Thus, the facts which constitute the reason in an argument from Example, from Analogy, or from Cause to Effect, would, under this use of the term, be equally circumstantial. But the argument from Circumstantial Evidence is always an argument from Effect to Cause. In other words, it sets out with an observed effect or class of effects and seeks to establish a cause to which it is due, and although analogical evidence and classes of facts other than testimony are included in the name, the character and object of the argument is always essentially the same.

The principle upon which the argument is based was first clearly enunciated and definitely stated by courts of law, and examples of the argument abound in the reports of criminal trials. In one case, the house of a License Inspector, who had aroused the hostility of liquor sellers by

a strict enforcement of the law, was wrecked by some explosive. Shortly after the explosion, which happened about one o'clock in the morning, marks of foot-steps in the fresh snow were found leading from the place of the explosion to one of the hotels, not by the most direct route, but circuitously around a block and through a lane to the rear entrance of the hotel. In one of the rooms of the hotel was found a pair of boots which coincided with the foot-marks made in the snow, and under the mattress of the bed were found two sticks of dynamite and an unused dynamite fuse. The owner of the boots who occupied the room was unable to give any satisfactory explanation of these facts, and he was tried and convicted of the crime.

Another example may be taken from the celebrated trial of Dr. Palmer for the murder of John Parsons Cook. The charge was that Dr. Palmer had wilfully caused the death of Cook by poisoning with strychnine, and the circumstances relied on were briefly that Palmer had a motive for destroying Cook and the means and opportunity of doing it, that he was familiar with Cook and intimately connected with him in betting transactions on the turf, that Palmer was indebted in large sums of money raised on forged bills which were soon to mature, and was in desperate straits for money, that he had previously forged Cook's name to cheques payable to Cook's order and received the money, that Cook had in his possession a large sum of money at the time of his death, that Palmer was Cook's medical attendant and had been treating him for a supposed illness, that Palmer had purchased strychnine a short time before, that Cook's death was due to strychnine poisoning, that Palmer after the *post mortem*

examination attempted to destroy the evidence which that examination might afford, and that after Cook's death Palmer appeared to have plenty of money. Palmer was convicted and executed.

The force and effect of circumstantial evidence depend upon its incompatibility with, and incapability of explanation or solution upon, any other supposition than that of the truth of the fact or hypothesis which it is adduced to prove. It is not enough that a particular thesis will explain all the facts. Before it can be said to be proved it must harmonize with and satisfactorily account for all the facts, to the *exclusion of every other reasonable hypothesis*. If the circumstances are equally capable of explanation on any other reasonable theory, it is clear that the thesis is not established but remains in uncertainty. Every other reasonable supposition by which the facts may be accounted for, consistently with the falsity of the thesis, must therefore be disproved and eliminated; and only when no other supposition will reasonably account for all the facts can the thesis be legitimately adopted.

The rules for determining the weight and effect of circumstantial evidence are as follows:

1. The circumstances relied on to prove the thesis must be clearly and certainly established.

2. They must all be consistent with the truth of the thesis.

3. They must be inconsistent with any other reasonable supposition.

Rufus Choate has summed up these three rules in a speech in defence of Helen Maria Dalton:

"It is not enough that the circumstances relied on are certainly or plainly proved. It is not enough to show that they are consistent with the hypothesis of guilt. They must also render the hypothesis of innocence inadmissible and impossible, unreasonable and absurd, or they have proved nothing at all."

Wills in his work on *Circumstantial Evidence* says: "In order to justify the inference of guilt, the inculpatory facts must be incompatible with the innocence of the accused, and incapable of explanation upon other reasonable hypothesis than that of his guilt. This is the fundamental rule, the *experimentum crucis*, by which the relevancy and effect of circumstantial evidence must be estimated."

The principle on which an argument of this kind is based may be stated as follows:

Every thesis that is exclusively sufficient to explain or account for a given set of facts is true.

The whole argument may be expressed thus:

Thesis: A caused the death of B;

Reason: Because that thesis is exclusively sufficient to explain or account for the facts, C, D, E, F;

Principle: Every thesis that is exclusively sufficient to explain or account for a given set of facts is true.

An argument from Circumstantial Evidence often proceeds by first suggesting or establishing the antecedent or *à priori* probability of the thesis, that is, by proving the existence of a cause which more or less probably would produce the effect in question, and then adducing evidence *à posteriori* that the effect in question was due to that particular cause, either directly from the nature of the

collateral circumstances of the effect, or indirectly by the exclusion of all other possible causes.[21]

This procedure is analogous to the construction of a tunnel under a river or through a mountain, where work is begun at both ends with the object of forming a junction in the middle. *A priori* proof begins with a cause, supposed or established, and works forward as far as possible to its natural and probable effect; *à posteriori* proof begins with an effect and the circumstances surrounding it, and leads backward as far as possible to the cause which produced it.

In tracing crime to the criminal, sometimes one method, sometimes the other predominates, according to the discoverable facts, but both are usually employed in some degree. Thus, in the Palmer case above mentioned, some of the facts established antecedent or *à priori* probability. Beginning with the motive which is inferred from Palmer's character and circumstances, and his relations with the deceased, the facts lead on to show his opportunity for committing the crime, and his preparation for it. On the other hand, the circumstances of Cook's death leading back to the immediate cause—strychinine poisoning,—the facts that Palmer was apparently in possession of the fruits of his crime, and that he attempted to destroy incriminating evidence, serve to establish *à posteriori* probability.

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21. *A priori*, meaning from the former, from that which precedes, hence from antecedent to consequent or from cause to effect, is applied to proof proceeding from causes or first principles, and is opposed to proof *à posteriori*, which proceeds from effect to cause. Antecedent or *à priori* probability is the probability of a supposition or hypothesis drawn from reasoning from cause to effect or from analogy, previous to any observation or evidence that may be considered as giving it *à posteriori* probability.

In the dynamite case, the proof is almost wholly *à posteriori*. Beginning with the effect and the circumstances surrounding it, we are led literally step by step to the cause. The tracks in the snow are effects, leading to the conclusion that they were made by boots of a particular pattern; the finding of the boots in a room of the hotel lead to the conclusion that the occupant of that room wore them when the tracks were made, the circuitous route taken to the hotel suggests a purpose to conceal his destination and escape notice, the course of the tracks in the snow show that he was at the place where the crime was committed and had an opportunity of committing it. The finding of the dynamite in the prisoner's possession shows that he had the means of committing the crime, and the fact that it was put under the mattress of the bed suggest an intention of concealing the fact of his possession of it.

Circumstantial Evidence is relied on largely in criminal jurisprudence for the obvious reason that crimes are usually committed in secret when no eye-witness of the act is present, and therefore no direct testimony is available. It is usually drawn from one or more of several well-defined classes of facts: (1) circumstances which give rise to the motive, (2) circumstances from which may be inferred the unlawful design, such as threats, declaration of intention, (3) opportunity and preparation for committing the crime, such as the procuring of a weapon, tools, poison or other means of effecting the design, (4) possession of the fruits of the crime, (5) unexplained appearances of suspicion and attempts to account for them by false representations, (6) the suppression, destruction, fabrication or simulation of evidence,

(7) concealment or flight after the crime has been committed, (8) facts which go to establish personal identity, features, articles of dress, papers, etc.

"A crime," says Wills, "so far as it falls within the cognizance of human tribunals, is generally an act proceeding from a wicked motive; it follows, therefore, that in every such act there must have been one or more voluntary agents; that it must have had corresponding relations to some precise moment of time and portion of space; that there must have existed inducements to guilt, preparations for, and objects and instruments of crime; these—the acts of disguise, flight, or concealment, the possession of plunder or other fruits of crime, and innumerable other particulars connected with individual conduct, and with moral, social, and physical relations—afford materials for the determination of the judgment. It would be impracticable to enumerate the infinite variety of circumstantial facts, which of necessity are as various as the modifications and combinations of events in actual life."[22]

In criminal cases, one apparently insignificant circumstance may become a clue leading to the identification of the criminal and the complete circumstantial proofs of his crime. In the celebrated Yarmouth murder case, tried in 1901 before the Chief Justice of England, a laundry mark on some of the linen of the murdered woman was the only means by which her identity could be established. This led to the discovery of other facts by which her husband was finally convicted of the crime.

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22. Wills: *Circumstantial Evidence*, p. 45.

In the great Matlock will case the question was whether three codicils to a will were forged or genuine, and the deciding circumstance against the genuineness of the codicils was the manner in which the letter "t" in the word "to" was formed. The will was admitted to be in the handwriting of the testator, and the codicils were alleged by the plaintiff to be in the same handwriting, and by the defendants to be in the handwriting of a person named Else who had been employed by the testator to do writing and copying for him, and whose handwriting closely resembled that of the testator. The dispositions purporting to be made by the codicils were largely in favor of Else. In the will, the letter "t" in the word "to" was uncrossed fifty-one times, whole crossed (that is, the crossing stroke extending both right and left of the downstroke) five times, but never half-crossed; so in fifty of the testator's letters, the "t" was uncrossed one hundred and thirty-one times, whole-crossed fourteen times, but never half-crossed. In the codicils, on the other hand, the letter "t" was uncrossed twelve times, whole-crossed thirty-three times and half-crossed sixteen times. There had been three trials, and this discrepancy was only discovered shortly before the third trial. Lord Chief Justice Cockburn, before whom the case was tried, said in the course of his summing up, that the habit of crossing a "t" in a particular way might at first sight appear to be a small matter; but that in a case which was full of wonders, this was, perhaps, the most remarkable as well as the most convincing incident.

This case serves to illustrate also how evidence that might be referred to the principle of an argument from

Analogy may be incorporated in an argument from Circumstantial Evidence.

The following is a statement of the circumstances by which it was proved that one Donellan had murdered Sir Theodosius Boughton.

John Donellan was tried at the Warwick Assizes before Mr. Justice Buller for the murder of Sir Theodosius Boughton, his brother-in-law, a young man of fortune, twenty years of age, who up to the moment of his death had been in good health and spirits, with the exception of a trifling local ailment, for which he occasionally took a laxative draught. Mrs. Donellan was a sister of the deceased, and together with Lady Boughton, his mother, lived with him in Lawford Hall, the family mansion. On attaining twenty-one, Sir Theodosius would have been entitled absolutely to an estate of £2,000 per annum, the greater part of which, in the event of his dying under that age, would have descended to the prisoner's wife. For some time before the death of Sir Theodosius, the prisoner had on several occasions falsely represented the health of the deceased to be very bad, and his life to be precarious, and not worth a year's purchase, though to all appearance he was well and in good health. On the 29th of August, the apothecary in attendance sent in a mild and harmless draught, to be taken next morning. In the evening the deceased was out fishing, and the prisoner told Lady Boughton that he had been out with him, and that he had imprudently got his feet wet, both of which statements were false.

When called the following morning he was in good health; and about seven o'clock his mother went to his

chamber for the purpose of giving him his draught, which was kept—at the prisoner's suggestion, made after Sir Theodosius had on one occasion complained of forgetting to take it—upon the open shelf of his outer room, instead of locked up in his closet as formerly. On taking the draught on this occasion he observed that it smelt and tasted very nauseous, and Lady Boughton remarked that she thought it smelt very strongly like bitter almonds. In about two minutes he struggled very much, as if to keep the medicine down, and Lady Boughton observed a gurgling in his stomach; in ten minutes he seemed inclined to doze, but in five minutes afterwards she found him with his eyes fixed, his teeth clenched, and froth running out of his mouth, and within half an hour after taking the draught he died. Lady Boughton ran down-stairs to give orders to a servant to go for the apothecary, who lived about three miles distant; and in less than five minutes the prisoner came into the bedroom, and after she had given him an account of the manner in which Sir Theodosius had been taken, he asked where the physic bottle was, and she showed him the two bottles. The prisoner took up one of them and said "Is this it?" and being answered "Yes," he poured some water out of a water-bottle which was near into the phial, shook it, and then emptied it into some dirty water, which was in a wash-stand basin. Lady Boughton said, "You should not meddle with the bottle," upon which the prisoner snatched up the other bottle and poured water into that also, and shook it, and then put his finger to it and tasted it. Lady Boughton again asked what he was about, and said he ought not to meddle with the bottles; on which he replied,

he did it to taste it, though he had not tasted the first bottle. The prisoner ordered a servant to take away the basin and the bottles, and put the bottles into her hand for that purpose. She put them down again, on being directed by Lady Boughton to do so, but subsequently, while Lady Boughton's back was turned, removed them on the peremptory order of the prisoner.

On the arrival of the apothecary the prisoner said the deceased had been out the preceding evening fishing, and had taken cold; but he said nothing of the draught which he had taken. The prisoner had a still in his own room, which he had used for distilling roses, and a few days after the death of Sir Theodosius he brought it full of wet lime to one of the servants to be cleaned. The prisoner made several false and inconsistent statements to the servants and others as to the cause of the young man's death, attributing it at one time to his having been out fishing and getting his feet wet, and at another to the bursting of a blood-vessel, and again to the malady for which he was under treatment, and the medicine given to him. On the day of his death he wrote to Sir William Wheeler, Sir Theodosius's guardian, to inform him of the event, but made no reference to its suddenness. The coffin was soldered up on the fourth day after the death. Two days afterwards, Sir William, in consequence of the rumors which had reached him of the manner of his ward's death, and that suspicions were entertained that he had died from the effects of poison, wrote a letter to the prisoner, requesting that an examination should take place, and mentioning the gentlemen by whom he wished it to be conducted. He accordingly sent for them, but did

not exhibit Sir William Wheeler's letter alluding to the suspicion that the deceased had been poisoned, nor did he mention to them that they were sent for at his request. Having been induced by the prisoner to suppose the case to be one of ordinary sudden death, and finding the body in an advanced state of putrefaction, the medical gentlemen declined to make the examination, on the ground that it might be attended with personal danger. On the following day, a medical man, who had heard of their refusal to examine the body, offered to do so; but the prisoner declined his offer, on the ground that he had not been directed to send for him. On the same day the prisoner wrote to Sir William a letter, in which he stated that the medical men had fully satisfied the family, and endeavored to account for the event by the ailment under which the deceased had been suffering; but he did not state that they had not made the examination. Three or four days afterwards, Sir William, having been informed that the body had not been examined, wrote to the prisoner insisting that it should be done; which, however, he prevented, by various disingenuous contrivances, and the body was interred without examination.

In the meantime, the circumstances having become known to the coroner, he caused the body to be disinterred and examined on the eleventh day after death. When Lady Boughton, in giving evidence before the coroner's inquest, related the circumstances of the prisoner having rinsed the bottles, he was observed to take hold of her sleeve and endeavor to check her; and he afterwards told her that she had no occasion to have mentioned that cir-

cumstance, but only to answer such questions as were put to her; and in a letter to the coroner and jury he endeavored to impress them with the belief that the deceased had inadvertently poisoned himself with arsenic, which he had purchased to kill fish.

Mr. Justice Buller, in his charge to the jury, called their attention to the suddenness of the death immediately after the administration of the draught; to the prisoner's misrepresentation as to the deceased's state of health at a time when he appeared to others to be in good health and spirits; to his contrivances to prevent the examination of the body, and emphatically to his having rinsed out the bottle from which the draught had been taken, which, said the learned judge, "does carry with it strong marks of knowledge by him that there was something in that bottle which he wished should never be discovered;" and finally to his attempts to check the witness who spoke of that circumstance while giving her evidence before the coroner. The prisoner was convicted and executed.[23]

In an argument where proof is effected from Circumstantial Evidence, the thesis and the facts, so to speak, all hang together, form a consistent frame-work, and are in harmony with one another. On the supposition that the thesis is true, the facts which constitute the reason have a proper setting, and are all explained and accounted for as natural and probable, and are what we might expect from the course of our experience, while on any other supposition the facts are not explained or accounted for, do not fit into

23. Wills: *Circumstantial Evidence*, p. 324.

a consistent frame-work, but are left outstanding and inexplicable. The thesis is related to the facts given to support it in much the same way that a key is related to the lock which it opens. The lock is constructed with wards, arranged at intervals, and the key has corresponding grooves or indentations through which the wards pass, and the key is thus enabled to act as a lever in turning the bolt. The key is said to fit the lock, and any other key with a different arrangement of grooves does not fit it. In the same way, a thesis, if true, fits the surrounding facts, and any different thesis does not fit them.

The foundation of the argument is our belief that no fact exists or happens without a cause, and that there is no inconsistency in the course of events. If any action or event actually happened as alleged, then it must fit in or dove-tail with what went before and what came after, and with surrounding circumstances. If it does this, and in addition no other action or event could be substituted without destroying this consistency, then it must be allowed to be true. The argument has the same cogency as any other founded on the uniformity of the course of nature.

The argument from Circumstantial Evidence usually involves several arguments or inferences. Some facts are established by observation or the direct testimony of witnesses. These facts or some of them are used to establish other facts that have not been observed, or that are incapable of observation, such as motive, purpose, wicked or unlawful design, by a process of reasoning from Effect to Cause. The facts thus established by inference or argument, either alone or with other facts, are

again used to establish the antecedent probability of the thesis by reasoning from Cause to Effect or from analogies to be found in human experience. Other facts, again, established by observation or testimony, are used to establish proximate or remote causes by a process of reasoning from Effect to Cause, as when we argue that death was caused by wounds, drowning, poisoning, disease, or otherwise, from the effects found in the body of the deceased, or that a particular person committed a particular crime from his flight, concealment or disguise, from his possession of plunder or other fruits of the crime; from his suppression, destruction, or forgery of evidence, or from his false statements made to account for suspicious circumstances. So that although an argument from Circumstantial Evidence may be resolved into several probable arguments, it is, properly speaking, one complex argument, of which the whole frame-work of facts constitutes the Reason, based on the Principle of the exclusive sufficiency of the Thesis to explain those facts.

Most arguments from Experience might be reduced to this form of argument. In the case of testimony we believe a witness from a number of consistent circumstances, his manner of giving evidence, his reputation for truthfulness, his powers of observation, the accuracy of his memory, the probability of his story, etc. If the fact testified to is true it hangs together or is consistent with all these facts.

The greater the number of otherwise unconnected facts which the Thesis will explain or account for, the greater the probability of its truth, just as the greater the number of independent witnesses who testify to the same fact, the

greater is the probability of its truth. Thus, in identifying a prisoner as the one who committed a robbery, if it be proved that the robber wore a mask made of a black silk scarf, and that the prisoner had a similar one in his possession; that the robber had a white handled revolver at the time of the robbery, and that the prisoner had one like it in his possession when arrested; that the robber wore a pair of black woollen gloves, and that the prisoner had such a pair in his possession; that the robber took $50.00 out of the till; and that the prisoner had that sum in his possession,—the probability drawn from these four facts that the prisoner committed the robbery is much greater than if only one or two or three of these facts were established. Circumstantial Evidence is sometimes compared to a chain but is more aptly compared to a rope, or more aptly still to a web, made up of many strands woven together which is thus capable of supporting a weight for which an individual strand would be insufficient.

The argument from Circumstantial Evidence is much wider in its application than is commonly supposed, having regard to the class of facts which may be proved by it. In popular usage the argument is usually confined to cases in which a particular crime is traced to the criminal where the testimony of eye-witnesses does not exist or cannot be obtained. But it may be used to prove the commonest facts in daily life as well as the most comprehensive and far-reaching theories and principles in the various branches of science.

The evidence usually relied on to establish the theory of natural selection; the undulatory theory of light; that Sir

Philip Francis wrote the letters of Junius; that a glacial epoch existed in pre-historic times; that Bacon wrote the plays attributed to Shakespeare; that Mars is inhabited by intelligent beings; that the Apostle John wrote the Fourth Gospel; that the pyramids of Egypt were built by men; that the chalk beds of England and elsewhere were built up by minute marine organisms; that the utterances of spritualistic mediums under certain circumstances are messages or communications from discarnate spirits,—is of essentially the same character and may be referred to the same principle.

When the argument is employed to establish a general law or principle it is sometimes called an argument from Congruent Facts.

The late G. J. Romanes, in *Darwin and after Darwin*, in order to prove that natural selection is the cause or the main factor in organic evolution, sets forth various classes of facts, and then proceeds to show that these facts are precisely what we should expect if the principle of natural selection is true, that they fall into harmony with it and are explained by it, while they cannot be rendered intelligible on any other principle.

The following argument from Circumstantial Evidence to prove that Sir Philip Francis was the author of the letters of Junius, is taken from Macaulay's essay on Warren Hastings:

"Was he the author of the letters of Junius? Our own firm belief is that he was. The evidence is, we think, such as would support a verdict in a civil, nay, in a criminal proceeding. The handwriting of Junius is the very peculiar

handwriting of Francis, slightly disguised. As to the position, pursuits and connections of Junius, the following are the most important facts which can be considered as clearly proved; first that he was acquainted with the technical forms of the Secretary of State's office; secondly, that he was intimately acquainted with the business of the war office; thirdly, that he, during the year 1770, attended debates in the House of Lords, and took notes of speeches, particularly of the speeches of Lord Chatham; fourthly, that he bitterly resented the appointment of Mr. Chamier to the place of deputy secretary-of-war; fifthly, that he was bound by some strong tie to the first Lord Holland. Now Francis passed some years in the Secretary of State's office. He was subsequently chief clerk at the war office. He repeatedly mentioned that he had himself, in 1770, heard speeches of Lord Chatham; and some of these speeches were actually printed from his notes. He resigned his clerkship at the war office from resentment at the appointment of Mr. Chamier. It was by Lord Holland that he was first introduced into the public service. Now, here are five marks all of which ought to be found in Junius. They are all five found in Francis. We do not believe that more than two of them can be found in any other person whatever. If this agreement does not settle the question, there is an end of all reasoning on circumstantial evidence.

"The internal evidence seems to us to point in the same way. The style of Francis bears a strong resemblance to that of Junius; nor are we disposed to admit, what is generally taken for granted, that the acknowledged compositions of Francis are very decidedly inferior to the anonymous letters.

The argument from inferiority, at all events is one which may be argued with at least equal force against every claimant that has ever been mentioned, with the single exception of Burke; and it would be a waste of time to prove that Burke was not Junius. And what conclusion after all can be drawn from mere inferiority? Every writer must produce his best work, and the interval between his best work and his second best work may be very wide indeed. Nobody will say that the best letters of Junius are more decidedly superior to the acknowledged works of Francis than three or four of Corneille's tragedies to the rest, than three or four of Ben Jonson's comedies to the rest, than the Pilgrim's Progress to the other works of Bunyan, than Don Quixote to the other works of Cervantes. Nay, it is certain that Junius, whoever he may have been, was a most unequal writer. To go no further than the letters which bear the signature of Junius; the letter to the King and the letters to Horne Tooke, have little in common, except the asperity, and asperity was an ingredient seldom wanting in the writings or speeches of Francis.

"Indeed, one of the strongest reasons for believing Francis was Junius is the moral resemblance between the two men. It is not difficult, from the letters which, under various signatures, are known to have been written by Junius, and from his dealings with Woodfall and others, to form a tolerably correct notion of his character. He was clearly a man not destitute of real patriotism and magnanimity, a man whose vices were not of a sordid kind. But he must also have been a man in the highest degree arrogant and insolent, a man prone to malevolence, and prone to the error

of mistaking his malevolence for public virtue. "Doest thou well to be angry?" was the question asked in the old time of the Hebrew prophet. And he answered, "I do well." This was evidently the temper of Junius; and to this cause we attribute the savage cruelty which disgraces several of his letters. No man is ever so merciless as he who, under a strong delusion, confounds his antipathies with his duties. It may be added that Junius, although allied with the democratic party by common enmities, was the very opposite of a democratic politician. While attacking individuals with a ferocity which perpetually violated all the laws of literary welfare, he regarded the most defective parts of old institutions with a respect amounting to pedantry, pleaded the cause of Old Sarum with fervor, and contemptuously told the capitalists of Manchester and Leeds that, if they wanted votes, they might buy land and become freeholders of Lancashire and Yorkshire. All this, we believe, might stand, with scarcely any change, for a character of Philip Francis."

In the following argument, classes of fact are adduced as evidence to prove the Darwinian theory of descent with adaptive modifications.

"Throughout both the animal and vegetable kingdom we constantly meet with dwarfed and useless representatives of organs, which in other and allied kinds of animals and plants are of large size and functional utility. Thus, for instance, the unborn whale has rudimentary teeth, which are never destined to cut the gums; and throughout its life this animal retains, in a similar rudimentary condition, a number of organs which never could have been of use to any

kind of creature save a terrestrial quadruped. The whole anatomy of its internal ear, for example, has reference to hearing in air—as Hunter long ago remarked, "is constructed upon the same principle as in the quadruped"; yet, as Owen says, the outer opening and passage leading therefrom to the tympanum can rarely be affected by sonorous vibrations of the atmosphere, and indeed they are reduced, or have degenerated, to a degree which makes it difficult to conceive how such vibrations can be propagated to the ear-drum during the brief moments in which the opening may be raised above the water.

"Now, rudimentary organs of this kind are of such frequent occurrence, that almost every species presents one or more of them, usually, indeed, a considerable number. How, then, are they to be accounted for? Of course the theory of descent with adaptive modifications has a simple answer to supply—namely, that when, from changed conditions of life, an organ which was previously useful became useless, it will be suffered to dwindle away in successive generations."[24]

The following argument from Circumstantial Evidence is an attempt to prove that the planet Mars is inhabited:

"Starting with the known physical laws applicable to the concentration of matter, we found that though in general the course of evolution of the earth and Mars was similar, the smaller mass of Mars should have caused it to differ eventually from the earth in some important respects. Three of these are noteworthy: (1) its surface should be smoother

24. G. J. Romanes: *Darwin and after Darwin*, Vol. 1, p. 65.

than the earth's, (2) its oceans relatively less, (3) its air scantier. On turning to the observation of Mars, we then saw that these three attributes of the planet were precisely those the telescope disclosed. (1) The planet's surface was singularly flat, being quite devoid of mountains; (2) its oceans in the past covered at most three-eighths of its surface instead of three-quarters, as with us; (3) its air was relatively thin.

"We next showed that physical loss should, from its smaller mass, have caused it to age quicker, and that this aging should reveal itself by the more complete departure of what oceans it once possessed and by the wider spread of deserts.

"Telescopic observation we then found asserted these two peculiarities: (1) no oceans now exist on the planet's surface; (2) desert occupies five-eighths of it.

"From such confirmation of the principles of planetary evolution from the present aspect of the planet Mars, we went on to consider the two most essential prerequisities to habitability: water and warmth. The phenomena of the polar cap proved explicable as consisting of water, and not as of anything else. Still more important was the question of temperature; we took this up with particularity. We found several factors in the problem not hitherto reckoned with, and that when these were taken into account the result came out entirely different from what had previously been supposed. Instead of a temperature prohibitive to life, one emerged from our research entirely suitable for it. This the look of the disk confirmed. From these conditions vegetation might follow, and we saw effects which could only be

explained as such. A climate of extremes was what that of Mars appeared to be, with the summers warm. Now, investigations on the earth have shown that it is the temperature of the hottest season that determines the existence of both animals and plants. Thus the conditions on Mars showed themselves hospitable to both, the latter actually revealing its presence by its seasonal changes of tint.

"Here we reached the end of what might directly be disclosed in the organic economy of the planet. For at this point we brought up before a most significant fact: that vegetable life could thus reveal itself directly, but that animal life could not. Not by its body, but by its mind, would it be known. Across the gulf of space it could be recognized only by the imprint it had made on the face of Mars.

"Turning to the planet, we witnessed a surprising thing. There on the Martian disk were just such markings as intelligence might have made. Seen even with the unthinking eye they appear strange beyond belief, but viewed thus, in the light of deduction, they seem positively startling, like a prophecy come true.

"Confronting the observer are lines and spots that but impress him the more, as his study goes on, with their non-natural look. So uncommonly regular are they, and on such a scale, as to raise suspicion whether they can be by nature regularly produced.

"It becomes apparent to any one capable of weighing evidence that these things which so palpably imply artificiality on their face cannot be natural products at all, but that the observer apparently stands confronted with

the workings of an intelligence akin to and therefore appealing to his own. What he is gazing on typifies, not the outcome of natural forces of an elemental kind, but the artificial product of a mind directing it to a purposed and definite end."[25]

In an argument from Circumstantial Evidence, the Reason is seldom stated in full. The advocate seldom undertakes to prove that there is no other way of accounting for the facts, since the proof of some facts which the thesis will account for has the effect of shifting on the accused, or upon an opponent, the burden of showing that the facts can be explained in some other way. It is only when some other theory has been commonly accepted, and is, so to speak, in possession of the field, or some theory has been suggested which has some show of plausibility, that the burden of proof is again shifted upon the advocate supporting the thesis, who must then show that the alternative theory is untenable. Thus, Romanes, in *Darwin and after Darwin*, when arguing that the transmutation of species was due to Natural Selection, gives not only a summary of the facts which that thesis explained, but argued also that the hitherto accepted theory of special creation did not explain or account for the facts.

The advocates of spiritualism maintain that the phenomena are explained as messages from the dead, but they have failed to prove that they cannot be explained on any other reasonable theory. The opponents of spiritualism maintain that these facts may be explained by the known

25. Prof. Lowell: *Proofs of Life on Mars.*

laws of psychic phenomena without recourse to the theory of communication with departed spirits, which theory there is no means of verifying.

The controversy that waged from the time of Newton almost till our own day about the rival theories as to the nature of light, serves to illustrate the argument from Circumstantial Evidence when used to prove a general theory.

The following are the theories in question:

Corpuscular or emission theory: Every luminous body emits excessively minute elastic particles of matter or corpuscles which striking the eye produce the sensation of light.

Undulatory or wave theory: Every luminous body sets up a vibratory or wave motion in an elastic all-pervading medium called ether, which by impact on the retina produces the sensation of light.

Newton rejected the undulatory theory because, as he argued, if that theory were true, an opaque body would not cast a sharp shadow; the waves set in motion by the luminous body would, as he thought, necessarily sweep around obstacles, and close in behind them in such a way as to render sharp shadows impossible. This objection was met by Dr. Thomas Young, who showed that when the dimensions of an opaque object are very great in comparison with the wave length of light, the light-waves which fall upon the object are prevented from sweeping around and closing up behind it, by means of the phenomena known as "interference"; those waves which tend to pass around behind such an obstruction becoming compounded together in such a manner as to neutralize one another.

The Emission theory was rejected because it failed to explain satisfactorily the phenomena of reflection, refraction and absorption and the unequal refrangibility of different colors. The undulatory theory is now generally accepted by physicists because it is exclusively sufficient to explain all these facts.

SECTION VII.

ARGUMENTS FROM ASSOCIATION.

The arguments which we have heretofore considered, except those from Example and Analogy, involve an ascertained relation of cause and effect and depend upon Causal principles. Arguments from Association depend on Empirical principles, and derive their validity from the mere constancy of association between two things. When one thing is constantly associated in nature with another, we may argue from the latter to the former, although they are not connected by any known law of causation. Thus, it may be argued that the giraffe ruminates, because it is horned, by reference to the empirical principle that all horned animals ruminate. Although the function of rumination is always found without exception in animals that have horns, it is as yet unknown what, if any, is the causal connection between the two things. So, it may be argued that brass is harder than zinc and copper, by reference to the empirical principle that all alloys of metals are harder than any of their constituent elements.

We may argue in like manner when one thing is associated with another by convention, for instance, that Congress is in session because the flag is flying over the Capital, or that the ship will sail to-day because the blue-peter is flying at the mast-head.

The most common form of inferences and arguments from Association are those based on language, whether it be in words or signs. We are constantly inferring and arguing

what other people's thoughts, feeling and purposes are, from their words and gestures. Written language is doubly symbolical, the written word being a symbol of a sound, which in turn is a symbol of a thing, thought or feeling.

Arguments from Association are sometimes called arguments from Sign. The term argument from Sign has indeed been given a more extended meaning to include also arguments from Cause to Effect, from Effect to Cause, from Testimony and from Circumstantial Evidence. In a wide sense all arguments might be called Arguments from Sign, as sign is only another name for mark, symptom, symbol, indication, or evidence, which is the basis of all arguments from experience. The word has been discarded as a name for arguments because it does not sufficiently indicate the kind of relation between the thesis and the reasons.

SECTION VIII.

ARGUMENTS FROM EQUALITY.

Geometrical and other mathematical reasonings, which deal with the equality and inequality of numbers and magnitudes, may conveniently be called arguments from Equality. While of great importance in themselves, they are of small importance to the advocate on account of their comparative simplicity, the definiteness of their subject matter, and the ease with which an error in reasoning can be detected and corrected. There is little danger of being permanently deceived by a fallacy in mathematical reasoning. Mathematical reasonings are ultimately based on (1) axiomatic principles of equality, usually called intuitive or necessary truths; for example: things which are equal to the same thing are equal to one another; if equals be added to equals the wholes are equal; if equals be taken from equals the remainders are equal; and (2) definitions, such as definitions of number, point, line, figure, angle, triangle, circle, parallel lines, plane surface, right angle; for example: a plane surface is one in which, if any two points be taken, the straight line between them lies wholly in that surface; every plane figure bounded by a line which is everywhere equidistant from a given point within it, is a circle.

The peculiar certainty which we are accustomed to ascribe to mathematical reasonings is said to be an illusion.

"Why are mathematical certainty," says Mill, "and the evidence of demonstration, common phrases to express the very highest degree of assurance attainable by reason?

Why are mathematics by almost all philosophers, and even those branches of natural philosophy which, through the medium of mathematics, have been converted into deductive sciences, considered to be independent of the evidence of experience and observation, and characterized as systems of necessary truth?

"The answer I conceive to be, that this character of necessity ascribed to the truths of mathematics, and the peculiar certainty attributed to them, is an illusion, in order to sustain which, it is necessary to suppose that those truths relate to, and express the properties of, purely imaginary objects. It is acknowledged that the conclusions of geometry are deduced, partly at least, from the so-called definitions, and that those definitions are assumed to be correct representations, as far as they go, of the objects with which geometry is conversant. Now we have pointed out that, from a definition as such, no proposition, unless it be one concerning the meaning of a word, can ever follow; and that what apparently follows from a definition, follows in reality from an implied assumption that there exists a real thing conformable thereto. This assumption, in the case of definitions of geometry, is not strictly true; there exist no things exactly conformable to the definitions. There exist no points without magnitude; no lines without breadth, nor perfectly straight; no circles with all their radii exactly equal, nor squares with all their angles perfectly right. It will perhaps be said that the assumption does not extend to the actual, but only to the possible, existence of such things. I answer that, according to any test we have of possibility, they are not even possible. Their

existence, so far as we can form any judgment, would seem to be inconsistent with the physical constitution of our planet at least, if not of the universe. To get rid of this difficulty, and at the same time to save the credit of the supposed system of necessary truth, it is customary to say that the points, lines, circles and squares which are the subject of geometry, exist in our conceptions merely, and are part of our minds; which minds, by working on their own materials, construct an *à priori* science, the evidence of which is purely mental, and has nothing whatever to do with outward experience. By howsoever high authorities this doctrine may have been sanctioned, it appears to me psychologically incorrect. The points, lines, circles, and squares which any one has in his mind, are (I apprehend) simply copies of the points, lines, circles, and squares which he has known in his experience. Our idea of a point I apprehend to be simply our idea of the *minimum visible*, the smallest portion of surface which we can see. A line, as defined by geometers, is wholly inconceivable. We can reason about a line as if it had no breadth; because we have a power, which is the foundation of all the control we can exercise over the operations of our minds; the power, when a perception is present to our senses, or a conception to our intellects, of attending to a part only of that perception or conception, instead of the whole.

"Since then, neither in nature, nor in the human mind, do there exist any objects exactly corresponding to the definitions of geometry, while yet that science can not be supposed to be conversant about nonentities; nothing remains but to consider geometry as conversant about such

lines, angles and figures, as really exist; and the definitions, as they are called, must be regarded as some of our first and most obvious generalizations concerning those natural objects. The correctness of these generalizations as generalizations, is without a flaw: the equality of all the radii of a circle is true of all circles, so far as it is true of any one: but it is not exactly true of any circle; it is only nearly true; so nearly that no error of any importance in practice will be incurred by feigning it to be exactly true. It is an error to suppose, because we resolve to confine our attention to a certain number of the properties of an object, that we therefore conceive, or have an idea of the object, denuded of its other properties. We are thinking all the time of precisely such objects as we have seen and touched, and with all the properties which naturally belong to them; but for scientific convenience, we feign them to be divested of all properties, except those which are material to our purposes, and in regard to which we design to consider them."[26]

26. Mill: *System of Logic*, p. 58.

CHAPTER V.

ARGUMENTS FROM AUTHORITY.

ARGUMENTS from Authority are those based on principles derived from Authority.

Legal arguments, in so far as they are based on laws declared or enacted by the law-making power in a community are the most important class of Arguments from Authority.

In every trial before a judicial tribunal there are at least two issues: a question of law and a question of fact. These two questions when established and expressed in propositions constitute the Reason and the Principle respectively of the final argument, as for example:

Thesis: This prisoner is guilty of perjury;

Reason (question of fact): Because, being a witness in a judicial proceeding, he made a statement under oath which he knew to be false;

Principle (question of law): Every person who, being a witness in a judicial proceeding, makes a statement under oath which he knows to be false is guilty of perjury.

Of these two questions, one or both may be disputed and form the subject of argument. Thus, in the case just mentioned, the prisoner may deny that he made the false statement, or that there is any law providing a penalty, or his denial may cover both. When a question of fact is disputed it may be proved or disproved by an argument

from Experience, such as Testimony, Circumstantial Evidence, Analogy, etc. When a question of law is disputed it may be proved or disproved by an argument from Authority.

The Legislature and the Court are the two sources of authority for the promulgation of legal principles, which consist of statutory enactments and judicial decisions. The Legislature is the recognized and avowed authority for this purpose. Although the ostensible function of a judge is merely to declare what the law is, and decide what principle of law is applicable in any given case, yet he is often virtually a legislator, inasmuch as the principle which he declares to be applicable in any given case, although declared for the first time, has the force of law, and must thereafter be applied, unless his decision is reversed or over-ruled, to all like cases that arise.

"As all lawyers are aware," says Prof. Dicey, "a large part and, as many would add, the best part of the law of England is judge-made law—that is to say, consists of rules to be collected from the judgments of the courts. This portion of the law has not been created by Act of Parliament and is not recorded in the statute book. It is the work of the courts; it is recorded in the Reports; it is in short the fruit of judicial legislation. The amount of such judge-made law is in England far more extensive than a student easily realizes. Nine-tenths, at least, of the law of contract, and the whole, or nearly the whole, of the law of torts are not to be discovered in any volume of the statutes. Many acts of Parliament, again, such at the Sale of Goods Act, 1893, or the Bills of Exchange Act, 1882, are little else than the reproduction in a statutory shape of rules originally established

by the courts. Judge-made law has in such cases passed into statute law. Then, too, many statutory enactments, e.g. the fourth section of the Statute of Frauds, though they originally introduced some new rule or principle into the law of England, have been the subject of so much judicial interpretation as to derive nearly all their real significance from the sense put upon them by the courts. Nor let anyone imagine that judicial legislation is a kind of law-making which belongs wholly to the past, and which has been put an end to by the annual meeting and by the legislative activity of modern Parliaments. No doubt the law-making function of the courts has been to a certain extent curtailed by the development of parliamentary authority. Throughout the whole of the nineteenth century, however, it has remained, and indeed continues to the present day, in operation. New combinations of circumstances—that is, new cases—constantly call for the application, which means in truth the extension of old principles; or, it may be, even for the thinking out of some new principle, in harmony with the general spirit of the law, fitted to meet the novel requirements of the time. Hence whole branches not of ancient, but of very modern law have been built up, developed, or created by the action of the courts. The whole body of rules, with regard to the conflict of laws (or, in other words, for the decision of cases which contain some foreign element), has come into existence during the last hundred and twenty, and as regards by a far greater part of it, well within the last eighty, or even seventy years. But the whole of this complex department of law has neither been formed

nor even greatly modified by Parliament. It is the product of an elaborate and lengthy process of judicial law-making,"[1]

In arguing a question of law the functions of the respective advocates for the plaintiff and the defendant consist in setting forth reasons to establish some principle applicable to the particular case, and the function of the judge is to decide what principle is applicable. "Every court," says Prof. Dicey, "in deciding a case must tacitly or expressly apply to it some definite principle."

The pronouncement, decision or judgment of the judge, usually takes the form of a reasoned opinion or argument in which the principle held to be applicable is supported by reasons adopted from one of the advocates or devised by himself.

The report of the case of *Cutter* v. *Powell* affords a good illustration of the argument of a question of law (the facts not being disputed) by advocates, and of the reasoned decision of the judge. In that case, the following principle was declared to be law: "If a sailor, hired for a voyage, take a promissory note from his employer for a certain sum, provided he proceed, continue and do his duty on board for the voyage, and before the arrival of the ship he dies, no wages can be claimed either on the contract or on a *quantum meruit*."

It was argued on behalf of the plaintiff that he was entitled to recover a proportionable part of the wages on a *quantum meruit*, for work and labor done by the intestate during that part of the voyage that he lived and served the

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1. *Law and Public Opinion in England*, p. 359.

defendant; as in the ordinary case of a contract of hiring for a year, if the servant die during the year, his representatives are entitled to a proportionable part of his wages. There is a general rule that if a sailor desert, he shall lose his wages; but that is founded on public policy, and was introduced as a means of preserving the ship. But that rule cannot apply to this case; for there the sailor forfeits his wages by his own wrongful act, whereas here the seaman was prevented from completing his contract by the act of God. So if a mariner be impressed he does not forfeit his wages; for in *Wiggins* v. *Ingleton*, Lord Holt held, that a seaman, who was impressed before the ship returned to the port of delivery, might recover wages *pro tanto*. Neither is there anything in the terms of this contract to prevent the plaintiff's recovering on a *quantum meruit*. The note is a security, not an agreement; it is in the form of a promissory note, and was given by the master of the ship to the intestate to secure the payment of a gross sum of money, on condition that the intestate should be able to, and should actually, perform a given duty. The condition was inserted to prevent the desertion of the intestate, and to ensure his good conduct during the voyage. And in cases of this kind the contract is to be construed liberally. In *Edwards* v. *Child*, where mariners had given bonds to the East India Company not to demand their wages unless the ship had sailed to India, and there delivered her outward-bound cargo, the mariners were entitled to their wages on the outward-bound voyage, though the ship was taken on her return to England. This note cannot be construed literally, for then the intestate would not have been entitled to anything, though he had

lived and continued on board during the whole voyage, if he had been disabled by sickness from performing his duty. But even if this is to be considered as a contract between the parties, and the words of it are to be construed strictly, still the plaintiff is entitled to recover on a *quantum meruit*, because that contract does not apply to this case. The note was given for a specific sum to be paid in a given event; but that event has not happened and the action is not brought on the note. The parties provided for one particular case; but there was no express contract for the case that has happened: and therefore the plaintiff may resort to an undertaking which the law implies, on a *quantum meruit* for work and labor done by the intestate, in a case to which the express contract does not apply.

On behalf of the defendant it was argued that where there is an express contract between the parties, they cannot resort to an implied one. It is only because the parties have not expressed what their agreement was, that the law implies what they would have agreed to do had they entered into a precise treaty; but when they have once expressed what their agreement was, the law will not imply any agreement at all. In this case the intestate and the defendant reduced their agreement to writing, by the terms of which they must be bound. This is an entire and indivisible contract; the defendant engaged to pay a certain sum of money, provided the intestate continued to perform his duty during the whole voyage; that proviso is a condition precedent to the intestate or his representative claiming the money from the defendant, and that condition not having been performed, the plaintiff cannot now recover anything. In the common case of service,

if a servant who is hired for a year dies in the middle of it, his executor may recover part of his wages in proportion to the time of service; but if the servant agreed to receive a larger sum than the ordinary rate of wages, on the express condition of his service the whole year, his executor would not be entitled to any part of such wages in the event of the servant dying before the expiration of the year. Nor is it conclusive against the defendant that the intestate was prevented from fulfilling his contract by the act of God; for the same reason would apply to the loss of a ship which may equally happen by the act of God, and without any default in the sailors; and yet in that case the sailors lose their wages. But there are other cases that bear equally hard upon contracting parties, and in which an innocent person must suffer, if the terms of his contract require it; e.g., the tenant of a house who covenants to pay rent, and who is bound to continue paying the rent though the house is burnt down.

Judgment of Ashurst, J.:—We cannot collect that there is any custom prevailing among merchants in these contracts; and therefore we have nothing to guide us but the terms of the contract itself. This is a written contract, and it speaks for itself. And as it is entire and as the defendant's promise depends on a condition precedent to be performed by the other party, the condition must be performed before the other party is entitled to receive anything under it. It has been argued, however, that the plaintiff may now recover on a *quantum meruit;* but she has no right to desert the agreement; for wherever there is an express contract the parties must be guided by it, and one party cannot relinquish or abide by it as it may suit

his advantage. The intestate did not perform the contract on his part; he was not indeed to blame for not doing it; but still as it was a condition precedent, and as he did not perform it, his representative is not entitled to recover.[2]

If a law has been declared or enacted which is directly in point within the scope of which the particular case may be brought, that law may be established merely by reference to the statute or to the report of the judicial decision in question.

In case of dispute, the principle applicable to the case is arrived at by a process of reasoning, which takes the form of a deduction from or application of some legal principle the validity of which is admitted, or of the application or interpretation of some statutory enactment.[3]

1. *Deduction from Ultimate Principle.*

In the absence of any principle enacted by statute or declared to be law by judicial decision within which the particular case may be brought, resort must be had to the comprehensive principle which lies at the foundation of all systems of jurisprudence, and which may be stated at follows:

Whatever is just as between the parties, and not contrary to public policy, should be declared to be law; or, to put it negatively, *Whatever is unjust or contrary to public policy should not be declared to be law.*

Justice may be said to include whatever is right, fair,

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2. *Cutter* v. *Powell*, 6 T. R. 320.

3. Dicey: *Law and Public Opinion in England*, p. 486.

equitable, reasonable, humane, as opposed to what is wrong, unfair, unreasonable, absurd, cruel or oppressive.

This fundamental principle of the Common Law is implicit in the whole system, and was expressly recognized and laid down by Lord Mansfield in the case of *Millar* v. *Taylor*, in which the question to be decided was whether there was copyright at common law, that is, whether an author could restrain the publication of his own work by another before he had published it himself. Lord Mansfield said: "From what source is the common law drawn, which is admitted to be so clear, in respect of the copy before publication? From this argument—because it is just that an author should reap the pecuniary profits of his ingenuity and labor. It is just that another should not use his name without his consent. It is fit that he should judge when to publish, or whether he will ever publish. It is agreeable to the principles of right and wrong, the fitness of things, convenience and policy, and therefore to the common law, to protect the copy before publication."[4]

The case of the *Queen* v. *Instan* is another illustration of the manner in which a legal principle is arrived at, in the absence of any specific principle that is directly applicable. In this case the defendant was convicted of manslaughter for neglecting to supply food to her aunt with whom she lived, and by whom she was maintained, in consequence of which neglect the aunt died. Lord Chief Justice Coleridge, in giving judgment, said: "It would not be correct to say that every moral obligation involves a legal duty;

4. *Millar* v. *Taylor* (1769), 4 Burr. 2303.

but every legal duty is founded on a moral obligation. A legal common law duty is nothing else than the enforcing by law of that which is a moral obligation without legal enforcement. There can be no question in this case that it was the clear duty of the prisoner to impart to the deceased so much as was necessary to sustain life of the food which she from time to time took in. . . . There was therefore a common law duty imposed upon the prisoner which she did not discharge. . . . There is no case directly in point; but it would be a slur upon, and a discredit to the administration of justice in this country if there were any doubt as to the legal principle, or as to the present case being within it. The prisoner was under a moral obligation to the deceased from which arose a legal duty towards her."[5]

In the case of *Bird* v. *Holbrook*, the question arose whether the owner of land, who had placed spring guns in his garden without giving any notice that he had done so, was liable to the plaintiff, who entered the garden in pursuit of a stray fowl, and was injured by the discharge of one of the spring guns. Chief Justice Best, in giving judgment for the plaintiff, said: "We want no authority in a case like the present. We put it upon the principle that it is inhuman to catch a man by means which may maim him or endanger his life."[6]

In *Hern* v. *Nichols* the defendant's agent knowingly misrepresented the quality or brand of goods purchased by the plaintiff, whereby the plaintiff suffered loss, and the

5 *Queen* v. *Instan* (1893), 1 Q. B. 450.

6. *Bird* v. *Holbrook* (1828), 4 Bing. 628, 29 R. R. 657.

question was whether a principal is liable for wrongs committed by his agent in the course of the principal's business although the wrong was committed without the latter's knowledge or consent. Chief Justice Holt decided the question in the affirmative on the ground that as some one must be the loser by the deceit it was more reasonable that the loss should fall on the principal who employs and puts confidence in the deceiver, than on a stranger.[7]

The purpose of a system of jurisprudence is to secure justice to the individual in so far as that does not interfere with what is usually called Public Policy, or in other words, the convenience, advantage or well-being of the community as a whole. As laws are made by the community as a whole, it is natural that the interest of the community should be paramount, and that justice to the individual should be subservient to and controlled by those wider interests. "It is better," said Ashurst, J., in *Russell* v. *Men of Devon*, "that an individual should sustain an injury than that the public should suffer an inconvenience."[8]

And Sir William Scott says, in *Evans* v. *Evans:* "The repugnance of the law to dissolve the obligations of matrimonial cohabitation may operate with great severity upon individuals; yet it must be carefully remembered that the general happiness of the married life is secured by its indissolubility. In this case as in many others the happiness of some individuals must be sacrificed to the greater and more general good."[9]

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7. 1 *Salkeld* 289.

8. 2 T.R. 585, 591.

9. *Hagg. Cons. Cas.* 35.

"Every one must feel that ignorance of the law could not be admitted as an excuse, even if the fact could be proved by sight and hearing in every case. Public policy sacrifices the individual to the general good. It is desirable that the burden of all should be equal, but it is still more desirable to put an end to robbery and murder. It is no doubt true that there are many cases in which the criminal could not have known that he was breaking the law, but to admit the excuse at all would be to encourage ignorance where the law has determined to make men know and obey, and justice to the individual is readily outweighed by the larger interests on the other side of the scale."[10]

The case of *Scott* v. *Stansfield* shows how a judicial decision is based on considerations of Public Policy although it may be unjust to the individual. In that case it was declared to be law that no action lies against a judge for any act done in his judicial capacity, even though done maliciously. The plaintiff alleged that he carried on the business of a scrivener, and that the defendant who was a judge had spoken and published a slander of him in relation to his said business, to wit: "You," meaning the plaintiff, "are a harpy, preying on the vitals of the poor." The words were spoken by the defendant when acting in his capacity as a judge. There is no question that if the words were untrue, and especially if they were spoken maliciously, the plaintiff suffered an injustice, but it was held that justice to the individual must give way to the public interest in

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10. Justice Holmes: *The Common Law*; see also *The Basis of Case-Law*, by A. H. F. Lefroy, K.C.

such a case. "It is essential," said Chief Baron Kelly in giving judgment, "in all courts that the judges who are appointed to administer the law should be permitted to administer it under the protection of the law independently and freely, without fear and without favor. This provision of the law is not for the protection or benefit of a malicious or corrupt judge, but for the benefit of the public, whose interest it is that the judges should be at liberty to exercise their functions with independence and without fear of consequences. How could a judge so exercise his office if he were daily and hourly in fear of an action brought against him, and of having the question submitted to a jury whether a matter on which he had commented judicially was or was not relevant to the case before him? Again, if a question arose as to the bona fides of the judge it would have, if the analogy of similar cases is to be followed, to be submitted to the jury. Thus, if we were to hold that an action is maintainable against a judge for words spoken by him in his judicial capacity, under such circumstances as those appearing on these pleadings, we should expose him to the constant danger of having questions such as that of good faith or relevancy raised against him before a jury, and of having the mode in which he might administer justice in his court submitted to their determination. It is impossible to overestimate the inconvenience of such a result."[11]

Another illustration is to be found in the case of *Marriot* v. *Hampton*, in which the following principle was laid down and declared to be law: "Where money has been paid by

11. *Scott* v. *Stanfield*, L. R. 3 Ex. 220.

the plaintiff to the defendant under the compulsion of legal process, which is afterwards discovered not to have been due, the plaintiff cannot recover it back in an action for money had and received. The grounds upon which it was decided are set forth in the following judgments:—

Lord Kenyon,.C.J.:—If this action could be maintained, I know not what cause of action could ever be at rest. After a recovery by process of law, there must be an end of litigation, otherwise there would be no security for any person.

Grose, J.:—It would tend to encourage the greatest negligence if we were to open a door to parties to try their cause again, because they were not properly prepared the first time with their evidence.

Lawrence, J.:—If the case alluded to be law, it goes the length of establishing this, that every species of evidence, which was omitted by accident to be brought at the trial, may still be of avail in a new action to overhale the former judgment, which is too preposterous to be stated."[12]

The basic principle of all law upon which the foregoing decisions are rested is the guide not only of judges in pronouncing new principles of law, but also of legislators when they are considering the enactment of new laws or the repeal of old ones. Thus, Pitt in arguing for the abolition of the slave trade rests his argument on this principle:—

"Why ought the slave trade to be abolished? Because it is incurable injustice. How much stronger, then, is the argument for immediate than gradual abolition. By allow-

12. *Marriot* v. *Hampton*, 7 T. R. 259.

ing it to continue for one hour, do not my right honourable friends weaken, do not they desert their own argument of its injustice? If on the ground of injustice it ought to be abolished at last, why ought it not now? Why is injustice to be suffered to remain for a single hour? From what I hear without doors, it is evident that there is a general conviction entertained of its being far from just, and from that very conviction of its injustice some men have been led, I fear, to the supposition that the slave trade never could have been permitted to begin, but from some strong and irresistible necessity,—a necessity, however, which, if it was fancied to exist at first, I have shown cannot be thought by any man to exist at present. This plea of necessity, thus presumed, and presumed, as I suspect, from the circumstance of injustice itself, has caused a sort of acquiescence in the continuance of this evil. Men have been led to place it in the rank of those necessary evils which are supposed to be the lot of human creatures, and to be permitted to fall upon some countries or individuals, rather than upon others by that Being whose ways are inscrutable to us, and whose dispensations, it is conceived, we ought not to look into. The origin of evil is, indeed, a subject beyond the reach of the human understanding; and the permission of it by the Supreme Being is a subject into which it belongs not to us to inquire. But where the evil in question is a moral evil which a man can scrutinize, and where that moral evil has its origin with ourselves, let us not imagine that we can clear our consciences by this general, not to say irreligious, way of laying aside the question. If we reflect at all on this subject, we must see that every necessary evil supposes that some

other and greater evil would be incurred, were it removed. I therefore ask: What can be that greater evil which can be stated to overbalance the one in question? I know of no evil that ever has existed, nor can imagine any evil to exist, worse than the tearing of eighty thousand persons annually from their native land, by a combination of the most civilized nations in the most enlightened quarter of the globe,—but more especially by that nation which calls herself the most free and most happy of them all."[13]

The ultimate authority for legal principles is the authority of conscience. "If the origin of the principles of the common law is to be traced beyond their practical existence, they seem to originate from conscience, i.e., from the same power which has made the majority of all free men of all ages and languages to have a perception of that which they feel to be just."[14]

"Every general proposition laid down by judges, as a principle of law, as distinguished from an enactment by statute, is the statement of some ethical principle of right and wrong applied to circumstances arising in real life."[15]

The laws of a country are, so far as they go, the expression of the collective moral sense or conscience of the community as to what is right and what is wrong, and are authoritative for the citizens of that country, whether declared by statutory enactments or by judicial decisions. The principles of

13. Pitt: *Speech on the Slave Trade.*

14. Sir W. Erle: *Law of Trade Unions*, p. 49.

15. Lord Esher, M.R. in *Blackburn* v. *Vigors* (1886). 17 Q.B.D. 553 at p. 558.

Equity, according to the old doctrine of the Court of Chancery, were said to flow from the King's Conscience, and the Chancellor who declared them was the mouth-piece of the King, or as it was expressed, the Keeper of the King's Conscience.

2. *Application of Judicial Decisions.*

When a judicial decision in any particular case is rested upon a prior decision which was made with respect to the same kind of facts and which is thus a direct authority, the prior decision is said to be "followed." But if the facts are not the same, but only more or less similar or analogous, the prior decision is said to be "applied"; and the argument to establish the new principle takes the form of an argument from Analogy. For example, it has been held that where the owner of a coal mine crosses the boundary of his property into an adjoining mine and takes coal therefrom he is liable to damages, the measure of damages being the value of the coal at the pit's mouth, not deducting the cost of severance.[16]

This principle has been extended by Analogy to the case of the owner of timber limits who cuts timber on the land of an adjoining owner, and who was held liable for the value of the timber after severance on the property without deducting the cost of severance.[17]

"Our common law system consists in applying to new combinations of circumstances those rules of law which we derive from legal principles and judicial precedents; and for

16. *Bulli Coal Co.* v. *Osborne* (1889), A. C. 351.

17. *Union Bank* v. *Rideau Lumber Co.*, 4 O.L.R. p. 21.

the sake of attaining uniformity, consistency, and certainty, we must apply those rules, where they are not plainly unreasonable and inconvenient, to all cases which arise; and we are not at liberty to reject them, and to abandon all analogy to them, in those to which they have not yet been judicially applied, because we think that the rules are not as convenient and reasonable as we ourselves could have devised. It appears to me to be of great importance to keep this principle of decision steadily in view, not merely for the determination of the particular case, but for the interests of law as a science."[18]

3. *Application of Statutory Enactments.*

The cardinal rule for the construction of the acts of a Legislature is that they should be construed according to the intent of the legislature which passed them. If the words of the statute are themselves precise and unambiguous, then no more can be necessary than to expound those words in their ordinary natural sense. The words themselves alone do in such a case best declare the intention of the lawgiver.[19]

"Intention of the Legislature" is a common but very slippery phase, which, popularly understood, may signify anything from intention embodied in positive enactment to speculative opinion as to what the Legislature probably

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18. Per Parke, J., *Mirehouse* v. *Rennell* (1833), 1 Cl. & F. pp. 527, 546; 36 R.R. p. 180.

19. *Cargo ex Argos* (1872), L. R. 5 P. C. 134, 153; *Tasmania* v. *Commonwealth* (1904), 1 Australia C.L.R. 239, 339; *Sussex Peerage Claim*, 11 Cl. & F. 85, 143.

would have meant, although there has been an omission to enact it. In a court of law or equity what the Legislature intended to be done or not to be done can only be legitimately ascertained from what it has chosen to enact, either in express words or by reasonable or necessary implication.[20]

An Act of Parliament is to be construed according to the meaning of the words in the English language as applied to the subject-matter unless there is some very strong ground, derived from the context or reason, why it should not be so construed.[21]

In construing wills, and, indeed, statutes and all written instruments, the grammatical and ordinary sense of the words is to be adhered to, unless that would lead to absurdity, or some repugnancy or inconsistency with the rest of the instrument; in which case the grammatical and ordinary sense of the words may be modified so as to avoid that absurdity, repugnancy, or inconsistency, but no further.[22]

Where the language of an Act is clear and explicit, effect must be given to it, whatever may be the consequences, for in that case the words of the statute speak the intention of the Legislature.[23]

If it be a question of statute law the enquiry becomes one of a much more restricted range (than a question of common

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20. *Salomon* v. *Salomon* (1897), App. Cas. 22, 38, per Lord Watson.

21. *Hornsey* v. *Monarch Investment Society* (1899), 24 Q.B.D. 1, per Lord Esher, at p. 9.

22. Per Lord Wensleydale in *Grey* v. *Pearson*, 26 L.J. Ch. 481: 6 H.L. Cas. 106.

23. *Warburton* v. *Loveland* (1831), 2 D. & Cl. (H.L.) 489.

law): it is then simply a question of construction, and none of those general considerations (moral right and wrong or general expediency and convenience) have any place except so far as they serve to illustrate the meaning of the language which the Legislature has chosen to employ: and it is obvious on this principle that when the legal, ordinary and grammatical sense of the language is unambiguous, these considerations are wholly irrelevant—they cannot alter that sense, which must prevail. Judges must take the law as they find it, and if it be unjust or inconvenient, it must be left to the constitutional authority to mend it.[24]

If the meaning of an enactment is not plain, if it is obscure or capable of two constructions, the meaning of what was intended may be ascertained by considering the consequences of either construction. And if it appears that one of these constructions will do injustice, and the other will avoid that injustice, it is the duty of the court to adopt the second and not to adopt the first; to construe it in such a way as to make it available for carrying out the objects of the Legislature, and for doing justice between parties.[25]

Where an expression is ambiguous, in considering what construction it is proper to put upon it we must look a little at the object of the Act and the consequences of the rival construction. If one construction produces consequences in conformity with the scope of an enactment, and with the consequences which follow from the constructions put upon

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24. *Garland* v. *Carlisle* (1837), 4 Cl. & F. 692, 705, per Coleridge, J.

25. *Phillips* v. *Phillips* (1866), L.R. 1 P. M. & M. 169, 173; *Hill* v. *East and West India Dock Co.* (1884), 9 App. Cas. 448.

other enactments of the same sort, while the rival construction introduces a startling novelty, no lawyer would adopt the latter construction.[26]

The case of *Wain* v. *Warlters* affords an illustration of the judicial interpretation of a statute. It is enacted by the Statute of Frauds that no person can be charged upon any promise to pay the debt of another, unless the agreement upon which the action is brought, or some note or memorandum thereof, is in writing, and it was argued that the word "agreement" as used in the statute must be understood to include the consideration for the promise as well as the promise itself. The reasons for this construction are given in the following judgment:

Grose, J.:—It is said that the parol evidence tendered does not contradict the agreement; but the question is, whether the statute does not require that the consideration for the promise shall be in writing as well as the promise itself. Now the words of the statute are that no action shall be brought whereby to charge the defendant upon any special promise to answer for the debt, etc. What is required to be in writing, therefore, is the agreement (not the promise, as mentioned in the first part of the clause), or some note or memorandum of the agreement. Now the agreement is that which is to show what each party is to do or perform, and by which both parties are to be bound; and this is required to be in writing. If it were only necessary to show what one of them was to do, it would be sufficient to state the promise made by the defendant who was to be

26. *Hornsey* v. *Monarch Investment Society* (1889), 24 Q.B.D. 1, at p. 9, per Lindley, L. J.

charged upon it. But if we were to adopt this construction, it would be the means of letting in those very frauds and perjuries which it was the object of the statute to prevent. For without the parol evidence, the defendant cannot be charged upon the written contract for want of a consideration in law to support it. The effect of the parol evidence then is to make him liable; and thus he would be charged with the debt of another by parol testimony, when the statute was passed with the very intent of avoiding such a charge, by requiring that the agreement, by which must be understood the whole agreement, should be in writing.[27]

In the following reasoned judgment of Justice Day of the Supreme Court of the United States, the word "copy" as used in the Copyright Act received a judicial interpretation, and the principle was laid down that that word does not include or apply to perforated rolls which, when operated in connection with a mechanism to which they are adapted, produce musical tones, or in other words, that such rolls are not "copies" of a musical composition within the meaning of the Act:

"Musical compositions have been the subject of copyright protection since the statute of February 3rd, 1831, and laws have been passed including them since that time. When we turn to the consideration of the Act it seems evident that Congress has dealt with the tangible thing, a copy of which is required to be filed with the Librarian of Congress, and wherever the words are used (copy or copies) they seem to refer to the term in its ordinary sense of

27. *Wain* v. *Warlters*, 5 East 10.

indicating reproduction or duplication of the original. Section 4,956 provides that two copies of a book, map, chart, or musical composition, etc., shall be delivered at the office of the Librarian of Congress.

"What is meant by a copy?

"Various definitions have been given by the experts called in the case. The one which most commends itself to our judgment is perhaps as clear as can be made, and defines a copy of a musical composition to be a 'written or printed record of it in intelligible notation.' It may be true that in a broad sense a mechanical instrument which reproduces a tune copies it, but this is a strained and artificial meaning. When the combination of musical sounds is reproduced to the ear it is the original tune as conceived by the author which is heard. These musical tones are not a copy which appeals to the eye. In no sense can musical sounds which reach through the sense of hearing be said to be copies as that term is generally understood, and as we believe it was intended to be understood in the statutes under consideration. A musical composition is an intellectual creation which first exists in the mind of the composer; he may play it for the first time upon an instrument. It is not susceptible of being copied until it has been put in a form which others can see and read. The statute has not provided for the protection of the intellectual conception apart from the thing produced, however meritorious such conception may be, but has provided for the making and filing of a tangible thing, against the publication and duplication of which it is the purpose of the statute to protect the composer.

"These perforated rolls are parts of a machine which, when duly applied and properly operated in connection with the mechanism to which they are adapted, produce musical tones in harmonious combination. But we can not think that they are copies within the meaning of the Copyright Act.

"It may be true that the use of these perforated rolls, in the absence of statutory protection, enables the manufacturers thereof to enjoy the use of musical compositions for which they pay no value. But such considerations properly address themselves to the legislative and not to the judicial branch of the Government. As the Act of Congress now stands; we believe it does not include these records as copies or publications of the copyrighted music involved in these cases."

In the case of *Curtis* v. *Stovin*, the court had to deal with section 65 of the County Courts Act, 1888, which gave power to the High Court to send certain actions, which could not be commenced in a county court, "for trial in any county court in which the action might have been commenced." If these words had been construed as they stand, no effect could have been given to the section. The court therefore read into the section the words, "if it had been a county court action." Fry, L. J., in giving judgment, said: "The only alternative construction offered to us would lead to this result—that the plain intention of the Legislature had entirely failed by reason of a slight inexactitude in the language of the section. If we were to adopt this construction we should be construing the Act in order

to defeat its object rather than with a view to carry its object into effect."[28]

Arguments based on Experience involve directly or indirectly the relation of Cause and Effect. This is the thread running through all our reasonings about phenomena, the clue by which we are guided in the labyrinth of facts and events. In Arguments from Authority no such relation is involved. In Arguments from Experience the question is: Is it true according to standards of truth which all men accept? In legal Arguments the question is: Is it just to the individual and to the community according to the standards of justice erected by the community through its authorized organs, the Legislature and the court?

In so far as arguments are based on texts of Scripture, they may be regarded as arguments from Authority, on the principle implied in all such reasoning, that whatever is there written is true.

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28. *Curtis* v. *Stovin* (1889), 22 Q.B.D., 512.

CHAPTER VI.

DEDUCTIVE AND INDUCTIVE ARGUMENTS.

THERE is a great deal of confusion and little agreement in the use of these terms among writers on logic and argument. According to some writers, all arguments are either deductive or inductive. But the confusion attending their use will be avoided, and a real and useful distinction gained, if we restrict their meaning, and employ them to denote two different modes of proving general propositions only. Arguments that are used to prove particular facts or propositions cannot be usefully described as either deductive or inductive.

Deductive and inductive arguments, thus understood, may be distinguished by the character of the Reason.

In Deductive arguments, the Reason is a general proposition or principle, and thus the three propositions which make up the argument are general propositions. The following are brief examples stated in full:—

Thesis: Slave labor is not profitable unless organized on a large scale;

Reason: Because it requires constant supervision;

Principle: Labor that requires constant supervision is not profitable unless organized on a large scale.

Thesis: Slave labor requires constant supervision;

Reason: Because slave labor is given reluctantly;

Principle: Labor that is given reluctantly requires constant supervision.

In the following passage are quoted three Deductive Arguments which different philosophers employ to prove the same thesis, namely, that it is wrong to commit murder:—

"All authorities concur, for instance, in holding that it is wrong to commit murder. But one philosopher tells us that it is wrong because it is inconsistent with the happiness of mankind, and that to do anything inconsistent with the happiness of mankind is wrong. Another tells us that it is contrary to the dictates of conscience, and that everything which is contrary to the dictates of conscience is wrong. A third tells us that it is against the Commandments of God, and that everything which is against the Commandments of God is wrong."[1]

In Inductive arguments, the Reason is a statement of evidence, that is, of facts or classes of facts observed or supposed to be observed, and the argument consists of two general propositions and one particular proposition. The following is an example:—

Thesis: All alloys of metals are harder than any of their constituent elements;

Reason: Because A, B, C, and an indefinite number of other alloys, have been found to be harder than any of their constituent elements, and no alloy has been found, after due search, that is not harder than any of its constituent elements;

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1. Rt. Hon. A. J. Balfour: *Foundations of Belief*, p. 206.

Principle: Whatever has been found to be true in a number of instances of a phenomenon, and never found to be false, after due search, in any instance, is true of all instances whatsoever.

For a long time the distinction was supposed to be that Deduction was syllogistic and that Induction was not, or, in other words, that every inference or argument which was capable of being expressed as a syllogism consisting of a major premise, a minor premise and a conclusion (or, as we have expressed it, a Principle, Reason and Thesis) was deductive, whether the conclusion was a general or a particular proposition. Deduction was described as the process of inference from a general proposition or principle to one less general, or to an individual fact, literally drawing or inferring down from a higher or wider to a lower truth. Thus, from the general proposition that "all organized beings are mortal," and the proposition that "all men are organized beings," we infer the less general truth that "all men are mortal," or from the general truth that "all men are mortal," and the fact that "the President is a man," we infer the particular fact that "the President is mortal."

Induction, on the other hand, was used to denote the process of concluding from individual facts or instances up to a general proposition or principle, as when we infer or argue that all men are mortal from the observed facts that A, B, C, and an indefinite number of other men, have died. The inference from Example has always been considered as the central type of Induction, and was so called from the *induction* or introduction of examples to support the conclusion. But as an inductive inference was not expressed

in a syllogistic form, it was thought to be incapable of being so expressed, because it was supposed that there was no major premise or principle on which it could be founded. These two forms continued to be employed side by side, and were regarded as two distinct modes of reasoning, the one a logical form, and the other extra-logical, as it did not conform to the requirements of proof. Deduction alone was dignified by the name of Argument, while Induction was called reasoning from Experience.

Archbishop Whately was the first to point out that an Inductive inference or argument could be expressed in syllogistic form, by supplying the implied principle on which it was founded, and he thus bridged the chasm which had theretofore existed between inductive and deductive modes of reasoning. "Much has been said by some writers," says Whately, "of the superiority of the inductive to the syllogistic method of seeking truth, as if the two stood opposed to each other; and of the advantage of substituting the Organon of Bacon for that of Aristotle, etc., which indicates a total misconception of the nature of both. There is, however, the more excuse for the confusion of thought which prevails on this subject, because eminent logical writers have treated, or at least have appeared to treat, of induction as a kind of argument distinct from the syllogism; which, if it were, it certainly might be contrasted with the syllogism, or rather, the whole syllogistic theory would fall to the ground, since one of the very first principles it establishes is that all reasoning, on whatever subject, is one and the same process, which may be clearly exhibited in the form of syllogisms. In every case where an inference is

drawn from induction (unless that name is to be given to a mere random guess without any grounds at all) we must form a judgment that the instances adduced are sufficient to authorize the conclusion that it is allowable to take these instances as a sample warranting an inference respecting the whole class. Now, the expression of this judgment in words is the very major premise alluded to."[2]

While Whately thus abolished the old distinction between deduction and induction, he did not supply a new one, and notwithstanding his analysis, the terms continued to be used in the old sense and in a constantly increasing variety of other senses. John Stuart Mill, who adopted Whately's theory of induction as to the requirements of proof, used the word in a wide sense, and introduced confusion in the use of the terms by holding that all reasoning from experience, whether the conclusion was general or particular, was essentially inductive. Prof. Hyslop has given the following examples to show his view of the difference between deductive and inductive inferences.

"Deductive: All men who are bitten (by a cobra) die; the man X Y is bitten; therefore he will die.

"Inductive: The men A, B, C, were bitten and died. The man X Y has also been bitten. Therefore X Y will die."

"This illustration," says Prof. Hyslop, "is only to say that the inference "X Y will die" may be either inductive or deductive according as the premises do or do not include it."[3]

Mr. Alfred Sidgwick propounds a distinction that is

2. *Logic*, p. 248.

3. *Elements of Logic*, p. 327.

somewhat similar. "In proportion," he says, "as we openly and distinctly refer to known principles—already generalized knowledge—is proof deductive; in proportion as we rapidly and somewhat dimly frame new principles for ourselves from the cases observed, is proof inductive, empirical, or (in its loosest form) analogical."[4]

But these distinctions are not very useful. They do not enable us to say whether any given argument is inductive or deductive unless the argument is expressed in full. Arguments are usually expressed elliptically thus: "X Y will die because he was bitten by a cobra." Here the principle is omitted. If it is not expressed, how are we to know whether the premises do or do not include the conclusion, or whether the principle was dimly or distinctly framed in the mind of the advocate? The distinction is made to depend on the form in which the advocate chooses to express the argument.

There is a tendency, however, among logical as well as scientific writers, to observe the distinction we have indicated, and to restrict the words Induction and Inductive to denote the mode of discovering and proving general propositions by an appeal to facts. Professor Bain says: "Induction is the arriving at general propositions, by means of fact . . . The sole method of attaining Inductive truths being the observation and the comparison of particulars, the sole evidence for such truths is Universal Agreement. A permanent or uniform concurrence can be established, in the last resort, only by the observation of its uniformity. That unsupported bodies fall to the ground, is a conjunction

4. *Fallacies*, p. 212.

suggested by the observation of mankind, and proved by the unanimity of all observers in all times and places. What is found true, wherever we have been able to carry our observations, is to be accepted as universally true, until exceptions are discovered. This is to apply the Universal Postulate, the primary assumption at the root of all knowledge beyond the present—that what has never been contradicted (after sufficient search) is to be received as true. Through this method alone—of Universal Agreement in detail—can our most general and fundamental truths be discovered and proved. It is the only proper Inductive Method. By it are established the Axioms of Mathematics, the Axioms of the Syllogism, the Law of Gravity, the Law of Causation or of Conservation. Likewise on it we depend for the proof of all uniformities that, although not ultimate, are for the time unresolved into higher uniformities; or what are termed Empirical Laws."[5]

Professor Fowler says: "Two bodies of unequal weight (say a guinea and a feather) are placed at the same height under the exhausted receiver of an air-pump. When released they are observed to reach the bottom of the vessel at the same instant of time, or, in other words, to fall in equal times. From this fact, it is inferred that a repetition of the experiment either with these two bodies or with any other bodies would be attended with the same result, and that, if it were not for the resistence of the atmosphere and other impeding circumstances, all bodies, whatever their weight, would fall through equal vertical spaces in equal times.

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5. *Logic, Deductive and Inductive*, pp. 231, 237.

Now, that these two bodies in this particular experiment fall to the bottom of the receiver in equal times is merely a fact of observation, but that they would do so if we repeated the experiment, or that the next two bodies we selected, or any bodies, or all bodies would do so, is an inference, and is an inference of that particular character which is called an Inductive Inference or an Induction."[6]

There is a tendency also, especially among scientific writers, to restrict the words Deduction and Deductive to designate the mode of discovering and proving general propositions by an appeal to principles.

This distinction between Induction and Deduction which we have been recommending, is observed when we speak of the Inductive and Deductive sciences, and when we say that an Inductive science tends to become Deductive. Sciences are concerned with establishing general principles. A science is said to be Inductive when its principles are discovered and proved by an appeal to facts or experience, as in Physiology, Geology, Biology; and a Science is said to be Deductive when its less general principles are deduced from, or proved by, its more general principles, as in the sciences of Number, Geometry and Jurisprudence.

By this use of the terms we have a real and useful distinction. Induction and Deduction, while they are indentical, having regard to the requirements of proof, and as Whately pointed out, are both syllogistic, present a single point of contrast in the character of the Reason or minor premise, and they can be distinguished in ordinary discourse

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6. *Inductive Logic*, p. 3

inasmuch as the reason or minor premise is usually expressed.

Arguments from Example, when used to establish general propositions, would therefore be Inductive; while arguments from Cause to Effect, from Association, from Equality and from Authority, when used to prove general propositions, would be Deductive.

The following example is a deductive argument from Cause to Effect to prove that competition is beneficial in its effects upon the laboring classes:

"It may be remarked that as a nation advances in industrial enterprise, all her commercial transactions are more completely governed by competition. There cannot be activity of trade without a keen desire for gain; but such feeling indicates the spirit of competition, for in business men compete with each other with the view of securing the greatest possible gain. It is, however, important to present competition in a somewhat different aspect; for the manner in which it has been here described may very possibly encourage the widespread error that with it there is associated something almost criminal. Many who profess to be social philosphers attach to competition the stigma of selfish greed. The poverty of the poor is often attributed to it; but we shall have reason to show that it is no enemy to the working classes. Without it, their poverty would be rendered doubly severe; for it is an active spirit of competition which maintains the capital from which the wages of the laborers are paid. Competition befriends the working-classes in other respects; it cheapens commodities and ensures that the maximum of wages shall always be paid. Competition is not confined to

one class; it may be as rife among buyers as among sellers, or among the employers as among the employed. Individuals who have goods to sell are to realize as large profits as possible; but when there is competition, a trader cannot be paid more than what is termed a fair price for his goods, because if he attempts to obtain more than the ordinary price he will be undersold by other traders. When buyers compete with each other they are anxious to secure the greatest gains, or in other words, to buy upon the best possible terms; and thus, when buyers are each intent on purchasing on the most favorable terms, a commodity is sure to realize what it is worth. It therefore follows that if, on the one hand, competition prevents a trader from obtaining exceptionally high profits; on the other hand, it ensures to him a fair price for his goods. Some, perhaps, may think it unfortunate that employers, stimulated by a desire to realize the largest gains, should engage their laborers on the lowest possible terms. But such conduct upon the part of the employers inflicts no injury on the laborers; for if there is activity of competition, an individual manufacturer or trader is as powerless to get laborers to work for him at less than the ordinary wages as he would be to buy cotton at a cheaper rate than his fellow manufacturers. The price of cotton is maintained because there is competition among those who are anxious to purchase it; the rate of wages is also maintained by competition among those who are anxious to purchase labor. Competition, consequently, exerts no tendency to reduce profits or wages; the tendency is rather one of equalization."[7]

7. Fawcett: *Political Economy*, p. 110.

"Professor Cairnes' work on the Slave Power furnishes a remarkable example of the successful application of the deductive method to the determination of economical questions. The economical effects of slavery are thus traced. We learn from observation and induction that slave labor is subject to certain characteristic defects: it is given reluctantly; it is unskilful; and, lastly, it is wanting in versatility. As a consequence of these characteristics, it can only be employed with profit when it is possible to organize it on a large scale. It requires constant supervision, and this for small numbers or for dispersed workmen would be too costly to be renumerative. The slaves must consequently be worked in large gangs. Now, there are only four products which repay this mode of cultivation, namely, cotton, sugar, tobacco and rice. Hence a country in which slave labor prevails is practically restricted to these four products, for it is another characteristic of slave labor, under its modern form, that free labor cannot exist side by side with it. But, besides restricting cultivation to these four products, some or all of which have a peculiar tendency to exhaust the soil, slave labor, from its want of versatility, imposes a still further restriction. The difficulty of teaching the slave anything is so great—the result of the compulsory ignorance in which he is kept, combined with want of intelligent interest in his work—that the only chance of rendering his labor profitable is, when he has once learned a lesson, to keep him to that lesson for life. Accordingly, where agricultural operations are carried on by slaves, the business of each gang is always restricted to the raising of a single product. Whatever crop be best suited to the char-

acter of the soil and the nature of slave industry, whether cotton, tobacco, sugar, or rice, that crop is cultivated, and that crop only. Rotation of crops is thus precluded by the conditions of the case. The soil is tasked again and again to yield the same product, and the inevitable result follows. After a short series of years its fertility is completely exhausted, the planter abandons the ground which he has rendered worthless, and passes on to seek in new soils for that fertility under which alone the agencies at his disposal can be profitably employed. Thus, from the characteristics of slave labor may be deduced the economical effect of exhaustion of the soil on which it prevails, and the consequent necessity of constantly seeking to extend the area of cultivation. From the peculiar character of the crops which can alone be successfully raised by slave labor may be explained the former prevalence of slavery in the Southern, and its absence in the Northern, States of the American Union; and from the necessity of constantly seeking fertile virgin soil for the employment of slave labor may be explained the former policy of the Southern States, which was invariably endeavoring to bring newly constituted States under the dominion of slave institutions."[8]

The following deductive argument proceeds from Cause to Effect to prove the principle that rent is not an element in the price of agricultural produce:—

"Let us now suppose that all land is made rent free by an arbitrary edict of the government. Such an act of spoliation, although it would interfere with property, would not

8. Fowler: *Inductive Logic*, p. 244.

cause any diminution in the consumption of food; the same quantity of agricultural produce would be required as before; the same area of land would have to be cultivated. That land would, consequently, still be required to be tilled which previously only paid a nominal rent; but if food were rendered cheaper, by making land rent free, this land, which before only paid a nominal rent, would be cultivated at a loss. No person, however, will continue to apply his labor and capital if he does not obtain in return the ordinary rate of profit, and, therefore, if food became cheaper, such land as we have just described would cease to be cultivated; but this cannot be, because the demand of the country for food is such that the produce which land yields cannot be dispensed with. It is therefore manifest that food would not become cheaper, even if land were made rent free. Rent consequently is not an element in the cost of production. The value of food is, *ceteribus paribus*, determined by the demand for it, because the demand for food regulates the margin of cultivation. Although the payment of rent does not influence the cost of producing food, yet the amount of rent paid indicates the position of the margin of cultivation, and the value of food must rise as this margin of cultivation descends."[9]

The importance and usefulness of the distinction which we have adopted between Inductive and Deductive processes become apparent when we consider that the same general proposition may be proved by two different arguments, the one inductive and the other deductive.

9. Fawcett: *Political Economy*, p. 128.

Thus, the principle that the lower strata of the air are denser than the upper may be proved deductively by reference to the principles that the air has weight, and that it is compressible, and inductively, by an appeal to facts, that is to say, by measuring the density of portions of air in the upper and lower strata at various places, and comparing the results. Henry Clay, in a speech on protection, argued deductively and inductively that the price of protected manufactures tends to decline; deductively, by reference to the principles that protection tends to excite competition, that competition tends to induce improved and cheaper methods and increased supply, and price, consequently, following the law of supply and demand, tends to decline. Inductively, he argued the same proposition by citing instances at various times, and of various protected manufactures where the price was known to have declined.

In the following passage, reference is made to an inductive argument based on statistics, that is, a summary of observed facts, followed by a deductive argument, to prove that color-blindness is nearly twice as prevalent among Quakers as among the rest of the community:—

"I may take this opportunity of remarking on the well-known character of color-blindness in connection with the fact, that it is nearly twice as prevalent among the Quakers as among the rest of the community, the proportions being 5·9 to 3·5 per cent. We might have expected an even larger ratio. Nearly every Quaker is descended on both sides solely from a group of men and women who segregated themselves from the rest of the world five or six generations ago; one of their strongest beliefs being that the fine arts

were worldly snares, and their most conspicuous practice being to dress in drabs. A born artist could never have consented to separate himself from his fellows on such grounds; he would have felt the profession of those opinions and their accompanying practices to be treason to his æsthetic nature. Consequently few of the original stock of Quakers are likely to have had the temperament that is associated with a love for color, and it is in consequence most reasonable to believe that a larger proportion of color-blind men would have been found among them than among the rest of the population."

The argument from Analogy which may be used to establish general propositions, especially in legal reasonings, might claim to be classed as either Deductive or Inductive. But this form of argument occupies a unique position between the two, and cannot conveniently be classed with either.

There is a striking similarity between the growth and development of the processes of Deduction and Induction, on the one hand, and the systems of Law and Equity, on the other. Deduction, like Law, was the first in the field, and from the beginning was a regular and coherent system of rules well adapted to the ends originally contemplated, but in the course of time became less fitted to meet the complex conditions with which it was confronted. At the period of its highest development, Deduction was supplemented by Induction, as Law was supplemented by Equity, a more elastic and comprehensive system adapted to new needs and conditions. Deduction and Induction continued to be employed for a time, side by side, as two distinct processes

having the same ends, the discovery and establishment of truth, until, like Law and Equity, they became fused into one, and recognized, not as two different modes of reasoning depending upon different requirements of proof, but as two forms of the same process of reasoning, just as Law and Equity were fused and became recognized as component parts of the Common Law.

CHAPTER VII.

CONDITIONAL AND UNCONDITIONAL ARGUMENTS.

CONDITIONAL arguments may be divided into three classes: (1) Hypothetical, (2) Disjunctive, and (3) Dilemma.

1. *Hypothetical Arguments.*

A hypothetical argument is one in which the Principle is a hypothetical proposition composed of antecedent and consequent, and the Reason is an assertion of the truth of the antecedent or of the falsehood of the consequent. A valid hypothetical argument may assume one of the following forms:—

Principle: If A is B, C is D;
Reason: A is B;
Thesis: C is D.

Principle: If A is B, C is D;
Reason: C is not D;
Thesis: A is not B.

A hypothetical argument may usually be expressed as a categorical or unconditional argument by changing the form of the principle. Thus, the argument, If the earth had a beginning it had a cause; it had a beginning; therefore it had a cause,—may be expressed unconditionally as follows: Whatever had a beginning had a cause; the earth had a beginning; therefore it had a cause.

2. *Disjunctive Arguments.*

A Disjunctive argument is one in which the principle is a disjunctive proposition, that is, a complex proposition made up of two or more propositions which are declared to be mutually incompatible, as for example: Either Will acts on matter or it does not; the cause of a given effect is either A, B, C, or D; the power to admit new States into the Union resides either in the judiciary, the executive, the Commander-in-Chief, or in Congress. A disjunctive proposition asserts that one and only one of the two or more alternatives is true, that if one is true, the other or others must be false, that if all but one are false, that one must be true. In a disjunctive argument the thesis is proved by disproving all other alternatives. The following is an example:—

Principle: Either A or B or C or D is the cause of X.
Reason: But neither A nor C nor D is the cause of X.
Thesis: Therefore B is the cause of X.

A disjunctive argument when stated in full is composed of two or more arguments or a chain of arguments. Thus, in the example given a separate argument is required to prove that A is not the cause of X; another to prove that C is not the cause, and so on until all the alternatives but one is disproved. The following is an example from a speech by Thaddeus Stevens to prove that Congress is the only power by which the Confederate States could be admitted into the Union:—

"In either case, it is very plain that it requires the action of Congress to enable them (the Confederate States) to form

a State government and send representatives to Congress . . . In whom does the Constitution place the power? Not in the judicial branch of the government, for it only adjudicates and does not prescribe laws. Not in the Executive, for he only executes and cannot make laws. Not in the Commander-in-Chief of the armies, for he can only hold them under military rule until the sovereign legislative power of the conqueror shall give them law."

3. *Dilemma.*

The argument usually referred to as a dilemma is a chain argument composed of Hypothetical and Disjunctive arguments, the object of which is to put an opponent "on the horns of dilemma," by showing that both or all of two or more alternatives to which he is limited, and one of which he must choose, are distasteful, or attended by unpleasant consequences, or fatal to his contention.

The following argument is a common form of the dilemma: If he acted of his own motive, he is a knave; if he did not act of his own motive, he is a catspaw. But he either acted of his own motive or he did not. Therefore he is either a knave or a catspaw.

The fatalist dilemma is as follows: If it is fated that you die, you will die whether you call in a doctor or not, and if it is fated that you will recover, you will recover whether you call in a doctor or not. But it must be fated either that you will die or that you will recover. Therefore you will die or you will recover whether you call in a doctor or not.

The following example is the dilemma in which the

custodians of the library at Alexandria are said to have been put by the Caliph Omar: If your books are in conformity with the Koran, they are superfluous; if they are at variance with it, they are pernicious. But they must either be in conformity with the Koran or at variance with it. Therefore they are either superfluous or pernicious.

The following argument was used by Sargent S. Prentiss in a speech to the jury in defense of Wilkinson: "According to his own account of the matter, he acted the part of a base and cowardly assassin. If he tells the truth, he is an assassinating villain; if he does not, he is a perjured villain. I leave him the choice of these two horns of the dilemma, though I doubt not the latter is the one on which he is destined to hang."

The following argument shows the inconsistency of two arguments advanced by different supporters of the same cause, and that therefore a choice must be made by them which of the two arguments shall be discarded:—

"The opponents of license reduction ought to get together and agree upon some common line of argument. One newspaper has been imploring its opponents to publish the police statistics, which, it maintains, will show that a previous reduction in the number of licenses led to an increase in drunkenness. A flaring poster asks us to vote against the reduction of licenses because it will destroy the trade of the brewers, maltsters, and distillers, lessen the consumption of corn, wheat, rye, hops, and other articles used in the manufacture of intoxicants and of bottles, and throw thousands of men out of employment.

"One or other of these arguments must be at fault.

If drinking is not diminished but increased by license reduction, then the brewers, distillers and malsters will not be ruined, but will sell more than ever, buy more bottles, corn, wheat, rye and hops, employ more men, stimulate agriculture and industry, and generally scatter plenty o'er a smiling land. On the other hand, if the business of the brewers and distillers falls off, and they buy fewer bottles, and less corn, hops, wheat and rye, it must be because less intoxicating liquor will be consumed. The only escape from the dilemma would be the construction of an argument to prove that drunkenness increases as drinking declines."

The following is a legal argument which disposes of a contention by means of a dilemma:—

"It is said that for some reason the primary and natural meaning of the words is to be extended . . . I am at a loss to see why. I think an Act of Parliament, an agreement, or other authoritative document, ought never to be dealt with in this way, unless for a cause amounting to a necessity or approaching it. It is to be remembered that the authors of the document could always have put in the necessary words if they had thought fit. If they did not, it was either because they thought of the matter and did not, or because they did not think of the matter. In neither case ought the court to do it. In the first case, it would be to make a provision opposed to the intention of the framers of the document; in the other case, to make a provision not in the contemplation of these framers."[1]

The following argument is a double dilemma. It is

1. *M'Cowan* v. *Baine* (1891), App. Cas. 401, 409, per Lord Watson.

not intended to put an opponent in a dilemma, but to show the dilemma in which all reasoners who consider the subject-matter ultimately find themselves:—

"Every theory of the relation between Will, or, more strictly, the Willing Self and Matter, must come under one of two heads: (1) Either Will acts on Matter, or (2) it does not. If it does act on Matter, it must be either as Free Will or as Determined Will. If it is as Free Will, it upsets the uniformity of Nature, and our most fundamental scientific conceptions must be recast. If it is as Determined Will, that is to say, if volition be interpolated as a necessary link between one set of material movements and another, then, indeed, it leaves the uniformity of Nature untouched, but it violates mechanical principles. According to the mechanical view of the world, the condition of any system at one moment is absolutely determined by its condition at the preceding moment. In a world so conceived there is no room for the interpolation even of Determined Will among the causes of material change. It is mere surplusage.

(2) "If the Will does not act on Matter, then we must suppose either that volition belongs to a psychic series running in a parallel stream to the physiological changes of the brain, though neither influenced by it nor influencing it—which is, of course, the ancient theory of pre-established harmony—or else we must suppose that it is a kind of superfluous consequence of certain physiological changes, produced presumably without the exhaustion of any form of energy, and having no effect whatever, either upon the material world, or, I suppose, upon other psychic conditions. This reduces us to automata, and automata of

a kind very difficult to find proper accommodation for in a world scientifically conceived.

"None of these alternatives seem very attractive, but one of them would seem to be inevitable."[2]

A dilemma is involved in the antinomies of pure reason, that is, the unavoidable contradictions into which reason falls when it applies to the transcendent and the absolute, the *à priori* conceptions of the understanding, which are valid only within the limits of possible experience. There are four antinomies of pure reason, according to Kant, relating (1) to the limits of the universe in space and time, (2) to the existence of atoms or the infinite divisibility of matter, (3) to the freedom of the will, and (4) to the cosmological argument for the existence of God. The following is Kant's proof and disproof of the proposition that the world has a beginning in time, and is limited also with regard to space.

THESIS.

"This world has a beginning in time, and is limited also with regard to space.

PROOF.

"For if we assumed that the world has no beginning in time, then an eternity must have elapsed up to every point of time, and therefore an infinite series of successive states of things must have passed in the world. The infinity of a series, however, consists in this, that it never can be completed by means of a successive synthesis. Hence

2. Rt. Hon. A. J. Balfour: *Foundations of Belief*, p. 312.

an infinite series of past worlds is impossible, and the beginning of the world is a necessary condition of its existence. This was what had to be proved first.

"With regard to the second, let us assume the opposite. In that case the world would be given as an infinite whole of co-existing things. Now we cannot conceive in any way the extension of a quantum, which is not given within certain limits to every intuition, except through the synthesis of its parts, nor the total of such a quantum in any way, except through a completed synthesis, or by the repeated addition of unity to itself. In order, therefore, to conceive the world, which fills all space, as a whole, the successive synthesis of the parts of an infinite world would have to be looked upon as completed; that is, an infinite time would have to be looked upon as elapsed, during the enumeration of all co-existing things. This is impossible. Hence an infinite aggregate of real things cannot be regarded as a given whole, nor as a whole given at the same time. Hence it follows that the world is not infinite, as regards extension in space, but enclosed in limits. This was the second point that had to be proved.

ANTITHESIS.

"The world has no beginning and no limits in space, but is infinite in respect both to time and space.

PROOF.

"For let us assume that it has a beginning. Then, as beginning is an existence which is preceded by a time in which the thing is not, it would follow that antecedently there was a time in which the world was not, that is, an

empty time. In an empty time, however, it is impossible that anything should take its beginning, because of such a time no part possesses any condition of existence or non-existence to distinguish it from another (whether produced by itself or through another cause). Hence, though many a series of things may take its beginning in the world, the world itself can have no beginning, and in reference to time past is infinite.

"With regard to the second, let us assume again the opposite, namely, that the world is finite and limited in space. In that case the world would exist in an empty space without limits. We should, therefore, have not only a relation of things in space, but also of things to space. As, however, the world is an absolute whole outside of which no object of intuition, and therefore no correlate of the world, can be found, the relation of the world to empty space would be a relation to no object. Such a relation, and with it the limitation of the world by empty space, is nothing, and therefore the world is not limited with regard to space, that is, it is unlimited in extension."[3]

The following argument points out the dilemma in which we are placed in choosing either of the two alternatives about the infinite divisibility of Matter, one of which must be true:—

"Matter is either infinitely divisible or it is not; no third possibility can be named. Which of the alternatives shall we accept? If we say that matter is infinitely divisible, we commit ourselves to a supposition not realizable in

3. Kant: *Critique of Pure Reason*, Max Mueller's Translation, p. 368.

thought. We can bisect and re-bisect a body, and, continually repeating the act until we reduce its parts to a size no longer physically divisible, may then mentally continue the process without a limit. To do this, however, is not really to conceive the infinite divisibility of matter, but to form a symbolic conception of expansion into a real one, and not admitting of other verification. Really to conceive the infinite divisibility of matter is mentally to follow out the divisions to infinity, and to do this would require infinite time. On the other hand, to assert that matter is not infinitely divisible is to assert that it is reducible to parts which no conceivable power can divide; and this verbal supposition can no more be represented in thought than the other. For each of such ultimate parts, did they exist, must have an upper and an under surface, a right and a left side, like any larger fragment. Now, it is impossible to imagine its sides so near that no plane of section can be conceived between them; and however great be the assumed force of cohesion, it is impossible to shut out the idea of a greater force capable of overcoming it. So that to human intelligence the one hypothesis is no more acceptable than the other; and yet the conclusion that one or other must agree with the fact seems to human intelligence unavoidable."[4]

4. Herbert Spencer: *First Principles*, p. 43.

CHAPTER VIII.

DIRECT AND INDIRECT ARGUMENTS.

ARGUMENTS may be distinguished as either direct or indirect. A direct argument is one in which the thesis is proved or disproved in the first instance, or by a single argument. An indirect argument is one in which the thesis is proved, not in the first instance, but obliquely, by proving that all possible alternatives are false, or disproved by proving something that is inconsistent with its truth. The chief forms of indirect arguments are: (1) Proof or disproof of alternatives; (2) Reduction to absurdity.

1. *Proof or Disproof of Alternatives.*

When either the thesis or one of two or more alternatives must be true, the thesis may be proved indirectly by disproving all the other alternatives, or disproved by proving one of the alternatives. Thus, in proving that a given straight line, A B, is equal to another given straight line, C D, we employ an indirect argument if we show that A B is not greater than C D, and that it is not less. The only possible alternative is that A B is equal to C D. An indirect argument is employed to prove the relation of cause and effect when it is shown that all the antecedents of an effect but one are unconnected with the effect. An indirect argument which proceeds by disproving alternatives is also a disjunctive argument.

The same thesis may sometimes be proved by an indirect argument as well as by a direct argument. The following is an example of an indirect argument followed by a direct argument to prove that the action of Congress is the only means by which the Confederate States could be enabled to form a State government, and send representatives to Congress:—

"In either case, it is very plain that it requires the action of Congress to enable them (the Confederate States) to form a State government and send representatives to Congress. Nobody, I believe, pretends that with their old constitutions and frames of government they can be permitted to claim their old rights under the constitution. They have torn their constitutional States into atoms, and built on their foundations fabrics of a totally different character. Dead men cannot raise themselves. Dead States cannot restore their own existence "as it was." Whose especial duty is it to do it? In whom does the Constitution place the power? Not in the judicial branch of government, for it only adjudicates and does not prescribe laws. Not in the Executive, for he only executes and cannot make laws. Not in the Commander-in-Chief of the armies, for he can only hold them under military rule until the sovereign legislative power of the conqueror shall give them law.

"There is fortunately no difficulty in solving the question. There are two provisions in the Constitution, under one of which the case must fall. The fourth article says:

"'New States may be admitted by Congress into the Union.'

"In my judgment this is the controlling provision in this

case. Unless the law of nations is a dead letter, the late war between two acknowledged belligerents severed their original compacts, and broke all the ties that bound them together. The future condition of the conquered power depends on the will of the conqueror. They must come in as new States or remain as conquered provinces. Congress—the Senate and House of Representatives, with the concurrence of the President—is the only power that can act in this matter."

2. *Reduction to Absurdity.*

A thesis may be disproved indirectly by showing that a proposition manifestly absurd is logically deducible from it, either by a deductive argument or by Analogy, usually called a *reductio ad absurdum*. The following is an example from the speech of Daniel Webster in reply to Hayne:

"The great question is, Whose prerogative is it to decide on the constitutionality or unconstitutionality of the laws? On that the main debate hinges. The proposition that in case of a supposed violation of the constitution by Congress, the States have a constitutional right to interfere and annul the laws of Congress, is the proposition of the honorable gentleman. I do not admit it. If the gentleman had intended no more than to assert the right of revolution for justifiable cause, he would have said only what all agree to. But I can not conceive that there can be a middle course, between submission to the laws when regularly pronounced constitutional, on the one hand, and open resistance (which is revolution or rebellion) on the other. This leads us to inquire into the origin of this government and the source of

of its power. Whose agent is it? Is it the creature of the State Legislatures, or the creature of the people? If the government of the United States be the agent of the State governments, then they may control it, provided they can agree in the manner of controlling it; if it be the agent of the people, then the people alone can control it, restrain it, modify, or reform it. It is observable enough that the doctrine for which the honorable gentleman contends leads him to the necessity of maintaining, not only that this general government is the creature of the States but that it is the creature of each of the States severally, so that each may assert the power for itself of determining whether it acts within the limits of authority. It is the servant of four-and-twenty masters, of different wills and different purposes, and yet bound to obey all. This absurdity (for it seems no less) arises from a misconception as to the origin of this government and its true character."

In the following extract the absurdity of a general proposition is shown by an analogy:

"The question of the preacher is triumphantly put: How do you know that there are not 'higher' laws of nature than your chemical and physical laws, and that these higher laws may not intervene and 'wreck' the latter?

"The plain answer to this question is, Why should anybody be called upon to say how he knows that which he does not know? You are assuming that laws are agents—efficient causes of that which happens—and that one law can interfere with another. To us, that assumption is as nonsensical as if you were to talk of a proposition of Euclid

being the cause of the diagram which illustrates it, or of the integral calculus interfering with the rule of three."[1]

The first class of indirect arguments may be employed in proof or in disproof, and the second class, Reduction to Absurdity, is more commonly employed in disproof, either in disproving the thesis itself, or in disproving the reason or the principle advanced in support of it. Further examples of the latter class will be given in the chapters on Disproof and Refutation.

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1. Huxley: *Scientific and Pseudo-Scientific Realism.*

CHAPTER IX.

DISPROOF.

ARGUMENTATION comprises three processes, proof, disproof and refutation. In the foregoing chapters we have been concerned mainly with the process of proof, and only incidentally with disproof or refutation.

Disproof, as we have seen, is essentially a process of proof, since it consists in proving that a given proposition is false, or in other words, in proving the contradictory of the proposition in question, or in proving some fact inconsistent with its truth; so that any of the kinds of arguments that may be used for proof may be used for disproof. It will be useful however to consider more fully the disproof of certain kinds of propositions, namely, general propositions and complex propositions.

1. *Of General Propositions.*

There are three modes of disproving general propositions, namely, Inductive, Deductive and Analogical, corresponding to the three modes of proving them.[1]

(1) Inductive disproof consists in *bringing in* or introducing examples which contradict the proposition in question, that is, by citing exceptions if the proposition is affirmative, and by citing instances if the proposition is negative. If the

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1. See Chapter VI.

proposition is universal, the proof of a single exception is sufficient to disprove it. If it is indefinite, it is necessary to prove more exceptions than instances.

The phrase "the exception proves the rule" originally meant that "the exception tests the rules" that is, the validity of a general proposition or rule is tested by exceptions. With the shifting of the meaning of the word "prove" from "test" to "establish," the phrase now means that the exception establishes the rule, that is, the fact of there being an instance called an exception implies the existence of a rule to which it could be an exception. It does not mean, of course, that the exception establishes the truth of the rule, as it may disprove it.

In the following extract from a speech by Frank H. Hurd the alleged principle that the balance of trade is in favor of a country when its exports exceed its imports, is disproved by a single exception.

"There are three popular opinions, industriously cultivated and strengthened by adroit advocates, upon which the whole system rests, and to which appeals are ever confidently made. These opinions are erroneous, and lead to false conclusions, and should be first considered in every discussion of this question.

"The first is, that the balance of trade is in our favor when our exportations exceed our importations. Upon this theory it is argued that it cannot be unwise to put restrictions upon importations, for, they say, that at one and the same time you give protection to our industries and keep the balance of trade in our favor. But the slightest investigation will show that this proposition cannot be maintained. A

single illustration often repeated, but never old in this discussion, will demonstrate it. Let a ship set sail from Portland, Maine, with a cargo of staves registered at the port of departure as worth $5,000. They are carried to the West India Islands, where staves are in demand, and exchanged for sugar or molasses. The ship returns, and after duty paid the owner sells his sugar and molasses at a profit of $5,000. Here more has been imported than exported. Upon this transaction the protectionist would say that the balance of trade was against us $5,000; the free trader says that the sum represents the profit to the shipper upon this traffic, and the true balance is in our favor."

In the following extract Professor Huxley argues that three general propositions which his opponent alleged were held by him to be true are untenable and false, by citing one or more exceptions to each.

"After the manner of a mediaeval disputant, Mr. Lilly posts up three theses, which, as he conceives, embody the chief heresies propagated by the late Professor Clifford, Mr. Herbert Spencer, and myself. He says that we agree (1) in putting aside as unverifiable, everything which the senses cannot verify; (2) everything beyond the bounds of physical science; (3) everything which cannot be brought into a laboratory and dealt with chemically.

"My lamented young friend Clifford, sweetest of natures, though keenest of disputants, is out of reach of our little controversies but his works speak for him, and those who run may read a refutation of Mr. Lilly's assertions in them. Mr. Herbert Spencer, hitherto, has shown no lack either of ability or of inclination to speak for himself; and it would be

a superfluity, not to say an impertinence, on my part, to take up the cudgels for him. But, for myself, if my knowledge of my own consciousness may be assumed to be adequate, I may be permitted to observe that the first proposition appears to me to be not true; that the second is in the same case; and that, if there be gradations in untrueness, the third is so monstrously untrue that it hovers on the verge of absurdity, even if it does not actually flounder in that logical limbo. Thus to all three theses, I reply in appropriate fashion, Nego—I say No; and I proceed to state the grounds of that negation, which the proprieties do not permit me to make so emphatic as I could desire.

"Let me begin with the first assertion, that 'I put aside, as unverifiable, everything which the senses cannot verify.' Can such a statement as this be seriously made in respect of any human being? But I am not appointed apologist for mankind in general; and confining my observations to myself, I beg leave to point out that, at this present moment, I entertain an unshakable conviction that Mr. Lilly is the victim of a patent and enormous misunderstanding, and that I have not the slightest intention of putting that conviction aside because I can not verify it either by touch, or taste, or smell, or hearing, or sight, which (in the absence of any trace of telepathic faculty) make up the totality of my senses.

"Again, I may venture to admire the clear and vigorous English in which Mr. Lilly embodies his views: but the source of that admiration does not lie in anything which my five senses enable me to discover in the pages of his article, and of which an orang-outang might be just as acutely sensible. No, it lies in an appreciation of literary

form and logical structure by æsthetic and intellectual faculties, which are not senses, and which are not unfrequently sadly wanting where the senses are in full vigor. My poor relation may beat me in the matter of sensation, but I am quite confident that, when style and syllogisms are to be dealt with, he is nowhere.

"If there is anything in the world which I do firmly believe in, it is the universal validity of the law of causation; but that universality can not be proved by any amount of experience, let alone that which comes to us through the senses. And when an effort of volition changes the current of my thoughts, or when an idea calls up another associated idea, I have not the slightest doubt that the process to which the first of the phenomena, in each case, is due, stands in relation of cause to the second. Yet the attempt to verify this belief by sensation would be sheer lunacy. Now I am quite sure that Mr. Lilly does not doubt my sanity; and the only alternative seems to be the admission that his first proposition is erroneous.

"The second thesis charges me with putting aside as unverifiable everything beyond the bounds of physical science. Again, I say, No. Nobody, I imagine, will credit me with a desire to limit the empire of physical science, but I really feel bound to confess that a great many very familiar and, at the same time, important phenomena, lie quite beyond its legitimate limits. I can not conceive, for example, how the phenomena of consciousness, as such, and apart from the physical process by which they are called into existence, are to be brought within the bounds of physical science. Take the simplest possible example, the feeling

of redness. Physical science tells us that it commonly arises as a consequence of molecular changes propagated from the eye to a certain part of the substance of the brain, when vibrations of the luminiferous ether of a certain character fall upon the retina. Let us suppose the process of physical analysis pushed so far that one could view the last link of this chain of molecules, watch their movements as if they were billiard balls, weigh them, measure them, and know all that is physically knowable about them. Well, even in that case, we should be just as far from being able to include the resulting phenomenon of consciousness, the feeling of redness, within the bounds of physical science, as we are at present. It would remain as unlike the phenomena we know under the names of matter and motion as it is now.

"The third thesis runs that I put aside as unverifiable everything which can not be brought into a laboratory and dealt with chemically; and, once more I say, No. This wondrous allegation is no novelty; it has not unfrequently reached me from that region where gentle (or ungentle) dulness so often holds unchecked sway—the pulpit. But I marvel to find that a writer of Mr. Lilly's intelligence and good faith is willing to father such a wastrel. If I am to deal with the thing seriously, I find myself met by one of the two horns of a dilemma. Either some meaning, as unknown to usage as to the dictionaries, attaches to 'laboratory' and 'chemical,' or the proposition is (what am I to say in my sore need for a gentle and yet appropriate word?) —unhistorical.

"Does Mr. Lilly suppose that I put aside as unverifiable all the truths of mathematics, of philology, of history?

And if I do not, will he have the great goodness to say how the binomial theorem is to be dealt with 'chemically,' even in the best appointed laboratory; or where the balances and crucibles are kept by which the various theories of the nature of the Basque language may be tested; or what reagents will extract the truth from any given History of Rome, and leave the errors behind as a residual calx?

"I really can not answer these questions, and unless Mr. Lilly can, I think he would do well hereafter to think more than twice before attributing such preposterous notions to his fellowmen, who, after all, as a learned counsel said, are vertebrated animals."[2]

The following extract from an address by Huxley is an argument to disprove the negative general proposition that physiology is not an experimental science, by citing instances:—

"Of all the strange assertions into which speculation without practical acquaintance with a subject may lead even an able man, I think this is the very strangest. Physiology not an experimental science! Why, there is not a function of a single organ in the body which has not been determined wholly and solely by experiment. How did Harvey determine the nature of the circulation, except by experiment? How did Sir Charles Bell determine the functions of the roots of the spinal nerves, save by experiment? How do we know the use of nerves at all, except by experiment? Nay, how do you know even that your eye is your seeing apparatus, unless you make the ex-

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2. Prof. Huxley: *Science and Morals.*

periment of shutting it; or that your ear is your hearing apparatus unless you close it up and thereby discover that you become deaf?"

(2) Deductive disproof consists in drawing out or deducing from the proposition in question another proposition that contradicts it, or, in other words, in reducing it to absurdity by showing that a proposition manifestly absurd or untenable is logically deducible from it. The following extract from a speech by Wendell Phillips is an example:—

"'Let women vote!' cries one. 'Why, wives and daughters might be Democrats, while their fathers and husbands would be Whigs. It would never do. It would produce endless quarrels.' And the self-satisfied objector thinks he has settled the question.

"But, if the principle be a sound one, why not apply it in a still more important instance? Difference of religion breeds more quarrels than difference in politics. Yet we allow women to choose their own religious creeds, although we thereby run the risk of wives being Episcopalians while their husbands are Methodists, or daughters being Roman Catholics while their fathers are Calvinists. Yet who this side of Turkey dare claim that the law should compel women to have no religious creed, or adopt that of their male relatives? Practically, this freedom in religion has made no difficulty; and probably equal freedom in politics would make as little."

The following is a further example of deductive disproof of a general proposition by showing that it is absurd:—

"Surely Mr. Lilly does not hold that the disbelief in

spontaneity—which term, if it has any meaning at all, means uncaused action—is a mark of the beast Materialism? If so, he must be prepared to tackle many of the Cartesians (if not Descartes himself), Spinoza and Leibnitz among the philosophers, Augustine, Thomas Aquinas, Calvin and his followers among theologians, as Materialists,—and that surely is a sufficient *reductio ad absurdum* of such a classification."[3]

A proposition that can be reduced to absurdity is said to "prove too much," since if it proves the advocate's contention in the particular case, it also proves the further proposition, which is untenable and absurd.

The following extract is a more elaborate instance of disproof by a reduction to absurdity, and is a typical example of the style and methods of one of the most brilliant of controversialists. The first paragraph is quoted by Professor Huxley from a sermon by Canon Liddon, and contains the propositions to be disproved. The subsequent paragraphs contain the disproof.

"'Imagination recoils from the idea that the course of nature—the phrase helps to disguise the truth—so unvarying and regular, the ordered sequence of movement and life, should suddenly cease. Imagination looks more reasonable when it assumes the air of scientific reason. Physical law, it says, will prevent the occurrence of catastrophes only anticipated by an apostle in an unscientific age. Might not there, however, be a suspension of a lower law by the intervention of a higher? Thus every time we lift our arms

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3. Prof. Huxley: *Science and Morals.*

we defy the law of gravitation, and in railways and steamboats powerful laws are held in check by others. The flood and the destruction of Sodom and Gormorrah were brought about by the operation of existing laws, and may it not be that in His illimitable universe there are more important laws than those which surround our puny life—moral and not merely physical forces? Is it inconceivable that the day will come when these royal and ultimate laws shall wreck the natural order of things which seems so stable and so fair?'

"The preacher appears to entertain the notion that the occurrence of a 'catastrophe' involves a breach of the present order of nature—that it is an event incompatible with the physical laws which at present obtain. He seems to be of opinion that 'scientific reason' lends its authority to the imaginative supposition that physical law will prevent the occurrence of catastrophes anticipated by an unscientific apostle.

"Scientific reason, like Homer, sometimes nods; but I am not aware that it has ever dreamed dreams of this sort. The fundamental axiom of scientific thought is that there is not, never has been, and never will be, any disorder in nature. The admission of the occurrence of any event which was not the logical consequence of the immediately antecedent events, according to those definite, ascertained or unascertained, rules which we call laws of nature, would be an act of self-destruction on the part of science.

"'Catastrophe' is a relative conception. For ourselves it means an event which brings about very terrible consequences to man, or impresses his mind by its magnitude

relatively to him. But events which are quite in the natural order of things to us may be frightful catastrophes to other sentient beings. Surely no interruption of the order of nature is involved if, in the course of descending through an Alpine pine-wood, I jump upon an ant-hill and in a moment wreck a whole city and destroy a hundred thousand of its inhabitants. To the ants the catastrophe is worse than the earthquake of Lisbon. To me it is the natural and necessary consequence of the laws of matter in motion. A re-distribution of energy has taken place, which is perfectly in accordance with natural order, however unpleasant its effects may be to the ants.

"Imagination, inspired by scientific reason, and not merely assuming the airs thereof, as it unfortunately does in the pulpit, so far from having any right to repudiate catastrophes and deny the possibility of the cessation of motion and life, easily finds justification for the exactly contrary course. Kant, in his famous *Theory of the Heavens*, declares the end of the world and its reduction to a formless condition to be a necessary consequence of the causes to which it owes its origin and continuance. And, as to catastrophes of prodigious magnitude and frequent occurrence, they were the favorite *asylum ignorantiæ* of geologists, not a quarter of a century ago. If modern geology is becoming more and more disinclined to call in catastrophes to its aid, it is not because of any *à priori* difficulty in reconciling the occurrence of such events with the universality of order, but because the *à posteriori* evidence of the occurrence of events of this character in past times has more or less completely broken down.

"The other fallacious employment of the names of scientific conceptions which pervades the preacher's utterance, brings me back to the proper topic of this present paper. It is the use of the word 'law' as if it denoted a thing—as if a 'law of nature,' as science understands it, were a being endowed with certain powers, in virtue of which the phenomena expressed by that law are brought about. The preacher asks, 'Might not there be a suspension of a lower law by the intervention of a higher?' He tells us that every time we lift our arms we defy the law of gravitation. He asks whether some day certain 'royal and ultimate laws' may not come and 'wreck' those which are at present, it would appear, acting as nature's police. It is evident, from these expressions, that 'laws,' in the mind of the preacher, are entities having an objective existence in a graduated hierarchy. And it would appear that the 'royal' laws are by no means to be regarded as constitutional royalties: at any moment, they may, like Eastern despots, descend in wrath among the middle class and plebeian laws, which have hitherto done the drudgery of the world's work, and, to use phaseology not unknown in our seats of learning, 'make hay' of their belongings. Or perhaps a still more familiar analogy has suggested this singular theory, and it is thought that high laws may 'suspend' low laws, as a bishop may suspend a curate.

"A law of nature, in the scientific sense, is the product of a mental operation upon the facts of nature which come under our observation, and has no more existence outside the mind than color has. The law of gravitation is a statement of the manner in which experience shows that bodies,

which are free to move, do, in fact, move toward one another. But the other facts of observation, that bodies are not always moving in this fashion, and sometimes move in a contrary direction, are implied in the words 'free to move.' If it is a law of nature that bodies tend to move towards one another in a certain way; it is another and no less true law of nature that, if bodies are not free to move as they tend to do, either in consequence of an obstacle, or of contrary impulse from some other source of energy than that to which we give the the name of gravitation, they either stop still, or go another way.

"Scientifically speaking, it is the acme of absurdity to talk of a man defying the law of gravitation when he lifts his arm. The general store of energy in the universe working through terrestrial matter is doubtless tending to bring the man's arm down; but the particular fraction of that energy which is working through certain of his nervous and muscular organs is tending to drive it up, and more energy being expended on the arm in the upward than in the downward direction, the arm goes up accordingly. But the law of gravitation is no more defied in this case than when a grocer throws so much sugar into the empty pan of his scales that the one which contains the weight kicks the beam.

"The tenacity of the wonderful fallacy that the laws of nature are agents, instead of being, as they really are, a mere record of experience, upon which we base our interpretations of that which does happen, and our anticipation of that which will happen, is an interesting psychological fact; and would be unintelligible if the tendency of the human mind toward realism were less strong.

"Even at the present day, and in the writings of men who would at once repudiate scholastic realism in any form, 'law' is often inadvertently employed in the sense of cause, just as, in common life, a man will say that he is compelled by the law to do so and so, when, in point of fact, all he means is that the law orders him to do it, and tells him what will happen if he does not do it. We commonly hear of bodies falling to the ground by reason of the law of gravitation, whereas that law is simply the record of the fact that, according to all experience they have so fallen when free to move, and of the grounds of a reasonable expectation that they will so fall."[4]

In the foregoing extract, arguments are advanced to prove the absurdity of the contentions that "physical law will prevent the occurrence of catastrophes," that "higher laws may suspend lower laws," and that "every time we lift our arms we defy the law of gravitation," by showing that law is not an agent or a force but a conception, and that the propositions thus interpreted are nonsensical.

(3) Analogical disproof consists in showing that the proposition in question is essentially similar to another proposition that is manifestly absurd and untenable, and is thus closely allied to Deductive disproof. The following is an example:

"To say that, when the policy of the government is changed by the result of an election from protection to free trade, every bookbeeper and letter-carrier and messenger and porter in the public offices ought to be a free-trader, is as

4. Prof. Huxley: *Scientific and Pseudo-Scientific Realism.*

wise as to say that if a merchant is a Baptist, every clerk in his office ought to be a believer in total immersion."[5]

In the following extract an analogy is made use of to show the absurdity of an alleged explanation:

"In them all (alleged messages from the dead through spirit mediums) there is a weird suggestion of imbecility which has been so often used as an argument against the authenticity of the messages. The explanation given by Mr. Myers and others is the imperfection of the instrument, 'the strange brain, the alien voice.' It is sufficient we might admit to render comprehensible the rare and broken character of the messages but it is difficult to see how it could be held accountable for their essential triviality. An untuned instrument may turn a sonata into an unmeaning jangle, it can hardly transform it into a nursery rhyme."[6]

2. *Complex Propositions.*

A complex proposition is one that contains two or more simple assertions. The charge or indictment in a criminal prosecution is usually a complex proposition, and it may be disproved by disproving any one of the simple propositions of which it is composed. Thus, the charge that the prisoner, being a witness in a judicial proceeding, made a statement under oath which he knew to be false, may be disproved by showing that the prisoner was not a witness, that the statement he made was not under oath, that it was not false, or that he did not know it to be false. So, a charge that the

5. George William Curtis: *Speech on the Spoils System.*

6. Prof. Muirhead: *Contemporary Review*, July, 1903.

prisoner at such a time and place broke into a dwelling-house with intent to rob, may be disproved by showing that the prisoner at that time was elsewhere, usually called proving an *alibi*.

The disproof of complex propositions will be further discussed in the next chapter.

CHAPTER X.

REFUTATION.

SECTION I.

FALLACIES GENERALLY.

"THE only complete safeguard against reasoning ill, is the habit of reasoning well; familiarity with the principles of correct reasoning, and practice in applying those principles. It is, however, not unimportant to consider what are the most common modes of bad reasoning; by what appearances the mind is most likely to be seduced from the observances of true principles."[1]

A fallacy is an argument which contains an error in reasoning made by mistake or design, the purpose, effect or tendency of which is to mislead. It usually has the appearance of being a valid argument, and seems to demand our conviction; but is really unsound, because it does not conform to the requirements of proof.

"It seems by most persons," says Whately, "to be taken for granted that a fallacy is to be dreaded merely as a weapon fashioned and wielded by a skilful sophist; or, if they allow that a man may with honest intention slide into one unconsciously, in the heat of argument, still they seem to

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1. Mill: *System of Logic*, p. 513.

suppose that where there is no dispute there is no cause to dread fallacy; whereas there is much danger, even in what may be called solitary reasoning, of sliding unwares into some fallacy, by which we may be so far deceived as even to act upon the conclusion thus obtained. By 'solitary reasoning' I mean the case in which one is not seeking for arguments to prove a given question, but laboring to elicit from one's previous stock of knowledge some useful inferences."[2]

"While sound reasoning is ever the more readily admitted, the more clearly it is perceived to be such, fallacy, on the contrary, being detected as soon as perceived, will, of course, be the more likely to obtain reception, the more it is obscured and disguised by obscurity and complexity of expression. It is thus that it is the most likely either to slip accidentally from the careless reasoner or to be brought forward deliberately by the sophist. Not that he ever wishes this obscurity and complexity to be perceived; on the contrary, it is for his purpose that the expression should appear as clear and simple as possible, while in reality it is the most tangled net he can contrive.

"Thus, whereas it is usual to express our reasoning elliptically, so that a premise (or even two or three entire steps in a course of argument) which may be readily supplied, as being perfectly obvious, shall be left to be understood, the sophist suppresses what is not obvious, but in reality is the weakest part of the argument, and uses every other contrivance to withdraw our attention (his art closely resembling the juggler's) from the quarter where the fallacy lies. Hence

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2. Whately: *Elements of Logic*, p. 186.

the uncertainty to which class any individual fallacy is to be referred; and hence it is that the difficulty of detecting and exposing fallacy, is so much greater than of comprehending and developing a process of sound argument. It is like the the detection and apprehension of a criminal in spite of all of his arts of concealment and disguise; when this is accomplished, and he is brought to trial with all the evidence of his guilt produced, his conviction and punishment are easy; and this is precisely the case with those fallacies which are given as examples in logical treatises; they are in fact already detected, by being stated in a plain and regular form, and are, as it were, only brought up to receive sentence. Or again, fallacious reasoning may be compared to a perplexed and entangled mass of accounts, which it requires much sagacity and close attention to clear up, and to display in a regular form; though when this is once accomplished, the whole appears so perfectly simple, that the unthinking are apt to undervalue the skill and pains which have been employed."[3]

"Moreover, it should be remembered that a very long discussion is one of the most effectual veils of fallacy. Sophistry, like poison, is at once detected, and nauseated, when presented to us in a concentrated form; but a fallacy, which when stated barely, in a few sentences, would not deceive a child, may deceive half the world if diluted in a quarto volume. For, as in a calculation one single figure incorrectly stated will enable us to arrive at any result whatever, though every other figure, and the whole of the

3. *Ibid*, p. 190.

operations, be correct, so a single false assumption in any process of reasoning, though every other be true, will enable us to draw what conclusion we please; and the greater the number of true assumptions, the more likely it is that the false one will pass unnoticed. But when you single out one step in the course of the reasoning, and exhibit it as a syllogism with one premise true and the other false, the sophistry is easily perceived. I have seen a long article to the effect that the potato is not a cheap article of food, in which there was an elaborate, and perhaps correct, calculation of the produce per acre, of potatoes, and of wheat—the quantity lost in bran—expense of grinding, dressing, etc., and an assumption slipped in, as it were incidentally, that a given quantity of potatoes contains but one-tenth part of nutritive matter equal to bread; from all which (and there is probably but one groundless assertion in the whole) a most triumphant result was deduced.

"To use another illustration; it is true in a course of argument, as in Mechanics, that 'nothing is stronger than its weakest part'; and consequently a chain which has one faulty link will break; but though the number of the sound links adds nothing to the strength of the chain, it adds much to the chance of the faulty one's escaping observation. In such cases as I have been alluding to, one may often hear it observed that 'there is a great deal of truth in what such a one has said,' i.e., perhaps it is all true except one essential point."[4]

Any one who disputes an assertion that has been made

4. *Ibid.*, p. 192.

may proceed in any one of three ways. First, he may call for proof of the assertion, if the burden of proving it is upon him who makes it; and if no reasons are given he is not called on to proceed further; if nothing can be advanced in its support it falls to the ground. Secondly, he may proceed to disprove it by reasons of his own. Thirdly, if the assertion is supported by arguments, he may refute them.

Refutation, as we have seen, is fundamentally a process of proof, since it consists in proving that a given thesis for which reasons have been given is not proved by them, or in other words, that a given argument does not conform to the requirements of proof, and is therefore a fallacy. Disproof and Refutation are often used in the same sense, namely, of showing an argument to be a fallacy; but it will be convenient to use disproof as meaning simply the process of proving an assertion to be false, and refutation the process of proving an argument to be false.

The requirements of proof are: First, that the Reason and Principle relied on (whether express or implied) are known or admitted to be true, and secondly, that this Reason and Principle together bear a certain relation to the thesis, namely, that they contain, involve or imply its truth. If it can be shown that either the Reason or the Principle is untrue, or that the asserted relation between the reasons and the thesis is untrue, then the fallacy of the argument is proved. Refutation is thus resolved into three processes, disproof of the Principle, disproof of the Reason, and disproof of the asserted Relation.

Since in actual argumentation the reason of any given

argument is seldom stated in full, and the principle is seldom stated at all, it becomes important, before attacking an argument, to reconstruct it, and to determine exactly the implications and presuppositions on which it is founded. Care should be taken to set forth exactly the proposition to be proved, and the reasons express and implied that are relied on to prove it, so that the argument may be resolved into three propositions, consisting of Thesis, Reason and Principle.

SECTION II.

DISPROOF OF PRINCIPLES.

There are certain principles which all who argue are either willing or bound to accept, and which it is unnecessary or impossible to disprove. Thus, the principle on which the various arguments from Example and from Analogy are based, it is impossible to disprove, and also unnecessary, as they are in fact accepted and acted on by all who argue, and they are the foundations of all arguments from Experience. So the principles upon which the arguments from Cause to Effect, from Effect to Cause, from Testimony and from Circumstantial Evidence are based, have been verified by the uniform experience of mankind, and have been relied on and adopted by everybody. There is, moreover, a body of principles which forms the common knowledge of mankind, the common stock of presuppositions or points of agreement from which a large part of argumentation proceeds. Since all mankind accepts and acts upon them, and no one can be found who seriously disputes them, it would be a waste of time to attempt to disprove them. In one sense it is impossible to disprove any principle, since the word "principle" usually means a general proposition that has been established or proved. We are here concerned only with the disproof of those general propositions which are put forward as principles and are relied on as the bases of arguments. The principle upon which an argument is founded, being necessarily a general proposition, may be disproved, if untrue, by the methods set forth

in the last chapter of disproving general propositions, that is, by Inductive, Deductive or Analogical disproof.

1. *Principles Derived from Experience.*

If the principle relied on is derived from Experience it may be disproved: (a) Inductively, by showing exceptions; (b) Deductively, by showing that it leads to untrue or absurd consequences; (c) by Analogy to another proposition that is manifestly untrue or absurd. In the following example, the principle that "whatever increases the amount of labor in a country is a benefit to it," is shown to be untrue by showing that absurd results follow from it:—

"A third erroneous impression sought to be made upon the public mind is that whatever increases the amount of labor in a country is a benefit to it. Protection, it is argued, will increase the amount of labor, and therefore will increase a country's prosperity. The error in this proposition lies in mistaking the true nature of labor. It regards it as the end, not as the means to an end. Men do not labor merely for the sake of labor, but that out of its products they may derive support and comfort for themselves and those dependent upon them. The result, therefore, does not depend upon the amount of labor done, but upon the value of the product. That country, therefore, is the most prosperous which enables the laborer to obtain the greatest possible value for the product of his toil, not that which imposes the greatest labor upon him. If this were not the case men were better off before the appliances of steam as motive power were discovered, or the telegraph was invented.

The man who invents a labor-saving machine is a public enemy; and he would be a public benefactor who would restore the good times when the farmer never had a leisure day, and the sun never set on the toil of a mechanic."[5]

2. *Principles Derived from Authority.*

If the principle relied on is a statutory enactment it may be disproved by showing (a) that it has been repealed either expressly or by necessary implication by subsequent legislation; (b) that it is unconstitutional, or, in other words, beyond the powers of the Legislature to enact; (c) that it conflicts with enactments of a superior Legislature having concurrent or exclusive jurisdiction in the premises.

In the case of *Gibbons* v. *Ogden*, in the Supreme Court of the United States, the appellant was Thomas Gibbons, a citizen of Elizabethtown, in the State of New Jersey, who was the owner of two steamboats used to carry passengers between the City of New York and Elizabethtown. These boats were licensed under an Act of Congress as vessels to be employed in the coasting trade. The respondent, Aaron Ogden, filed a bill in Chancery, and applied for an injunction restraining Gibbons from navigating his boats upon the ground that the Legislature of the State of New York had granted to Robert R. Livingston and Robert Fulton, the original inventors of the use of steam as a motive power, the exclusive right and privilege to navigate the waters of New York with steamboats, and that Livingston and Fulton had assigned to him these rights and privileges.

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5. Frank H. Hurd: *Speech on Tariff for Revenue Only.*

The New York State courts granted the injunction, and an appeal was carried to the Supreme Court of the United States. The following is taken from the address of Attorney-General Wirt on behalf of the appellant:—

"On the part of the appellant, I trust I shall be able to demonstrate that the laws of the State of New York are unconstitutional and void: (1st) Because they are in conflict with powers exclusively vested in Congress, which powers Congress has fully exercised by laws now subsisting and in full force; (2nd) because, if the powers be concurrent, the legislation of the State is in conflict with that of Congress, and is, therefore, void. The powers with which the laws of New York conflict, are the power 'to promote the progress of science and the useful arts by securing, for a limited time, to authors and inventors, the exclusive right to their respective writings and inventions,' and the power 'to regulate commerce with foreign nations and among the several states.' If these powers were exclusive in Congress, and it had exercised them by subsisting laws, and if the laws of New York interfere with the laws of Congress by obstructing, impeding, retarding, burdening, or in any other manner controlling their operation, the laws of New York are void, and the judgment of the State court, founded on the assumption of their validity, must be reversed.

"The respondent has said that 'no power can be exclusive from its own nature, except where it formed no part of State authority previous to the Constitution, but was first created by the constitution itself.' But why were these national powers thus created by the Constitution? Because they look to the whole United States as their theatre of action.

And are not all the powers given to Congress of the same character? Under the power to regulate commerce the commerce to be regulated is that of the United States with foreign nations, among the several States, and with the Indian tribes. No State had any previous power of regulating these. The same thing might be affirmed of all other powers enumerated in the Constitution. They were all created by the Constitution, because they were to be wielded by the whole Union over the whole Union, which no State could previously do. If any one power, created by the Constitution, may be exclusive for that reason, then all may be exclusive, because all are originally created. If, on the other hand, we are to consider the powers enumerated in the Constitution, not with reference to the greater arm that wields them and the more extended territory over which they operate, but merely in reference to the nature of the particular power in itself considered, then, according to this new test, all the powers given to Congress are concurrent, because there is no one power given to it which, considered in this light, might not have been previously exercised by the States within their respective sovereignties.

"But this argument 'proves too much'; for it has been conceded that some of the powers are exclusive from their nature; whereas, if the argument were sound, none of them could be exclusive. On this argument the entire head or class of exclusive powers arising from the nature of the power must be abolished. But this court has repeatedly determined that there is such a class of exclusive powers. The power of establishing a uniform rule of naturalization is one of the instances. Its exclusive character is rested on the con-

stitutional requisition that the rule established under it should be uniform."[6]

When the principle relied on is a judicial decision it may be disproved or overthrown by showing, (a) that it has been overruled by a Court having superior jurisdiction, or superseded by statutory enactment, (b) that it is in conflict with previous decisions of greater authority, (c) that it is unjust, or contrary to public policy, or in other words that the principle was wrongly decided, and is what lawyers call "bad law," and should be overruled.

The case of *Mills* v. *Armstrong* is an instance in which a previous decision in *Thorogood* v. *Bryan* was overruled on the ground that that decision was opposed to principles of justice. In the case of *Thorogood* v. *Bryan* the personal representatives of a deceased person brought an action against the owner of an omnibus by which the deceased was run over and killed. The omnibus in which the deceased had been carried had set him down in the middle of the road instead of drawing up to the kerb; and before he could get out of the way he was run over by the defendant's omnibus, which was coming along at too rapid a pace to be able to pull up. Both drivers were found guilty of negligence, but it was held that the plaintiff was not entitled to recover on the principle that a passenger 'identifies' himself with the conveyance in which he is travelling, and if the driver is guilty of negligence his fault is imputed to the passenger.[7]

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6. Attorney-General Wirt: Argument in *Gibbons* v. *Ogden*, 9 Wheat. p. 1.

7. *Thorogood* v. *Byran*, 8 C.B. 115.

In the case of *Mills* v. *Armstrong*, (*The Bernina*) a collision occurred between the steamship *Bernina* and the steamship *Bushire*, the result of which was that Armstrong, the first engineer of the *Bushire* was drowned. The collision was caused by the negligence of those in charge of both ships, and the action was brought by the personal representatives of Armstrong against the owner of the *Bernina* to recover damages for his death. It was argued that the plaintiff could not recover on the principle laid down in *Thorogood* v. *Byran*. But it was held by the House of Lords that the case of *Thorogood* v. *Byran* was wrongly decided and the principle of it was overruled. The following is from the judgment of Lord Watson:

"It appears to me that the 'Identification' upon which the decision in *Thorogood* v. *Byran* is based has no foundation in fact. I am of opinion that there is no relation constituted between the driver of an omnibus and its ordinary passengers which can justify the inference that they are identified to any extent whatever with his negligence. He is the servant of the owner, not their servant; he does not look to them for orders, and they have no right to interfere with his conduct of the vehicle except the right of remonstrance when he is doing, or threatens to do, something that is wrong, or inconsistent with their safety. Practically they have no greater measure of control over his actions than the passenger in a railway train has over the conduct of the engine-driver. I am therefore unable to assent to the principle upon which the case of *Thorogood* v. *Byran* rests. In my opinion an ordinary passenger by an omnibus, or by a ship, is not affected, either in a question with contributory

wrongdoers or in one with innocent third parties, by the negligence of the driver or of the master and crew, unless he actually assumes control over their actions."[8]

Lopes, L.J., in the court below, said: "The theory of the Identification of the passengers with the driver is a fallacy and a fiction, contrary to sound law and opposed to every principle of justice."[9]

If the principle contended for and relied on has not been previously enacted by statute or declared by judicial decision, but is one which an advocate seeks to establish and have declared to be law for the first time, it may be disproved or overthrown by showing (a) that it is unjust, or that it leads to absurd or monstrous consequences, or (b) that it is contrary to public policy. This may be done by the Deductive or Analogical forms of disproof.

In the case of *Sunbolf* v. *Alford*, the principle contended for by the defendant was as follows:

"Every inn-keeper has a right to detain the person of his guest, and to take off and detain his clothes as a pledge to secure the payment of his bill."

The court decided that the principle was unsound on the ground that it would lead to absurd and monstrous consequences. Lord Abinger said: "If an inn-keeper has a right to detain the person of his guest for non-payment of his bill he has the right to detain him until the bill is paid which may be for life . . . The proposition is monstrous."

Parke, B., said: "If the inn-keeper take the coat off the

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8. *Mills* v. *Armstrong*, L.R. 13 A.C., p. 1.

9. L.R. 12 P.D., at p. 99.

guest's back, and that prove to be an insufficient pledge, he may go on and strip him naked, and that would apply to either a male or to a female. That is a consequence so utterly absurd that it cannot be entertained for a moment."[10]

In the case of *Emmens* v. *Pottle* it was contended that a dealer who sold a newspaper containing a libel in the ordinary course of business, although not knowing that it contained, or was likely to contain, a libel, was in law a publisher of the libel. This alleged principle of law was shown to be unsound by showing that it leads to unjust consequences. Lord Esher in giving judgment used the following argument:

"The result would be that every common carrier who carries a newspaper which contains a libel would be liable for it, even if the paper were one of which every man in England would say that it was not likely to contain a libel. To my mind the mere statement of such a result shows that the proposition from which it flows is unreasonable and unjust."[11]

10. *Sunbolf* v. *Alford* (1838), 3 M. & W. 248, 49 R.R. 593.

11. *Emmens* v. *Pottle* (1885), 16 Q.B.D. 354.

SECTION III.

DISPROOF OF REASONS.

Fallacies that consist in the falsity of the principle on which they are based are of relatively infrequent occurrence, and the reasons for this are not far to seek. In the first place, the principles on which are based the arguments of most frequent occurrence, such as arguments from Example, from Cause to Effect, from Testimony, from Circumstantial Evidence, from Analogy have been verified and accepted by all who use these forms of arguments, and although they are seldom expressed they are secure fr n attack. Secondly, in other cases, an untrue principle, being necessarily expressed in general terms, is a proposition of wider sweep than the statement of a particular fact, and hence offers a larger target for attack. Since it may be more easily disproved, it is less likely to survive and pass current for truth, and to be used as the basis of an argument.

The great majority of fallacies consist in the falsity of the Reason, more especially when the Reason consists of a complex proposition.

When the Reason is a simple particular proposition it may be disproved by any argument that may be applicable, such as Testimony, Circumstantial Evidence, or Analogy.

When the reason relied on is a general proposition as in deductive arguments it may be disproved, if untrue, in one of the modes already outlined in the last chapter for disproving general propositions. In the following passage a deductive argument is stated and afterwards refuted by

disproving the general proposition which constitutes the Reason.

"But there are other branches of Biological Science, besides Physiology proper, whose practical influence, though less obvious, is not, as I believe, less certain. I have heard educated men speak with an ill-disguised contempt of the studies of the Naturalist, and ask, not without a shrug, 'What is the use of knowing all about these miserable animals—what bearing has it on human life?' "

The argument here indicated may be expressed in full as follows:

Thesis: The study of Natural History should not be pursued;

Reason: Because it has no bearing on human life;

Principle: Studies that have no bearing on human life should not be pursued.

It is refuted by citing instances which show that the study of natural history has a bearing on human life.

"I cannot but think that he who finds a certain proportion of pain and evil inseparably woven up in the life of the very worms will bear his own share with more courage and submission; and will, at any rate, view with suspicion those weakly amiable theories of the Divine government, which would have us believe pain to be an oversight and a mistake—to be corrected by and by. On the other hand, the predominance of happiness among living things—their lavish beauty—the secret and wonderful harmony which prevades them all, from the highest to the lowest, are equally striking refutations of that modern Manichean doctrine, which exhibits the world as a slave-mill, worked with many tears, for mere utilitarian ends.

"There is yet another way in which natural history may, I am convinced, take a profound hold upon practical life, and that is, by its influence over our finer feelings, as the greatest of all sources of that pleasure which is derivable from beauty. I do not pretend that natural history knowledge, as such, can increase our sense of the beautiful in natural objects. I do not suppose that the dead soul of Peter Bell, of whom the great poet of nature says,

'A primrose by the river's brim,
A yellow primrose was to him,
And it was nothing more,'

would have been a whit roused from its apathy by the information that the primrose is a Dicotyledonous Exogen, with a monopetalous corolla and central placentation. But I advocate natural history knowledge from this point of view, because it would lead us to *seek* the beauties of natural objects, instead of trusting to chance to force them on our attention. To a person uninstructed in natural history, a country or sea-side stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall. Teach him something of natural history, and you place in his hands a catalogue of those which are worth turning round."[12]

In arguments in which the Reason consists of a complex proposition the risk of error is enhanced, because in such arguments the whole reason is seldom expressed, and that part of the reason which is not expressed is apt to be overlooked. It often happens that, while the expressed part

12. Huxley: *Educational Value of the Natural History Sciences.*

of the Reason may be true, that part which is unexpressed, but which is nevertheless relied on, and required to give validity to the argument, is untrue. In arguments from Example, from Analogy, from Cause to Effect, from Effect to Cause, from Testimony, and from Circumstantial Evidence, the Reason consists of a complex proposition which in ordinary argumentative discourse is incompletely expressed, and which it will be useful to consider separately. The Reason may be disproved and the argument refuted by disproving any part of the complex proposition; but before this can be done effectually it will be expedient to set forth the Reason in full.

(a) *In Arguments from Example.*

Fallacies very frequently arise from the tendency of the mind to hasten the reasoning process, from a certain inability to suspend judgment and wait until all the facts have been investigated. The constant tendency of the mind is to pass upon the facts, however meagre, that are immediately before it, and jump to conclusions. This is especially true in the investigation and proof of causes.

Every argument to prove that one thing is the cause of another may be stated in the following form:—

Thesis: A is the cause of the effect, B.

Reason: Because A is an antecedent of B and all other antecedents have been shown to be unconnected with B.

Principle: Where all the antecedents of an effect but one have been shown to be unconnected with that effect, that one is the cause.

All the various arguments to prove the relation of Cause and Effect which we have discussed are merely different methods of eliminating uninfluential antecedents, and they may all be finally reduced to this form. Whenever we make an experiment we aim to exclude all antecedents but one, and when an effect follows the introduction of that one, we conclude that to be the cause. The Reason in this argument may be disproved and the argument refuted by showing (1) that A is not an antecedent of B, or (2) that one or more of the other antecedents have been overlooked.

The common fallacy committed in arguments to prove facts of causation proceeds from arguing that one thing is the effect of another merely because it follows that otner—*post hoc ergo propter hoc*—other antecedents of the effect being overlooked. Thus, if the country is prosperous after the enactment of a protective tariff, it is argued that prosperity is due to the tariff. If after taking a certain medicine we get well, we attribute our getting well to the taking of the medicine.

"Xenophon informs us that, during the retreat of the ten thousand from the region of the Euphrates, a cutting north wind blew in the faces of the soldiers and gave them severe pain; whereupon one of the soothsayers advised that sacrifices should be offered to the wind. This was done, and 'it seemed to all,' says Xenophon, 'that the severity of the wind immediately ceased.' Inasmuch as the sacrifice to the god Boreas would appear to the Greeks an adequate cause for the mitigation of the north wind, the occurrence of the latter event immediately after the former would, to their minds, be a conclusive proof of causa-

tion. To a modern, who does not consider a sacrifice to Boreas as possessing any such virtue, the two events appear to be merely coincident in point of time; and he does not recognize the one as the effect of the other. In like manner, when we see a conjurer's tricks, we do not believe that they are produced by any magic or supernatural power, though we are unable to explain them by natural means. We are convinced that they are owing to some sleight of hand, and not to any occult virtue resident in the conjurer, though we cannot discover the real causation.'[13]

In the following passage it is argued that the fall in the price of quinine was due to the removal of the duty on it, and the only reason given is that the effect was observed to come after the alleged cause.

"As a matter of fact the effect of the removal of the duty was magical. In five years from the date the bill became a law—July, 1879—quinine had fallen from $3.40 per ounce to $1.23, and in ten years, July, 1889, to 35 cents, in 1905 to 21 cents."[14]

In this case the removal of the duty may have been the sole operating cause, but no attempt is made to eliminate other agencies that might have produced the same effect. The argument might be refuted by showing an increase in the supply of quinine, the discovery of cheaper methods of manufacture, the decrease of diseases in which quinine is employed as a remedy, the discovery of cheaper or more efficacious substitutes, and a consequent decrease in the

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13: Sir G. C. Lewis: *Methods of Observation and Reasoning in Politics*, p. 349.

14. Ida M. Tarbell: *American Magazine*, April, 1907.

demand for quinine,—all agencies which tend to produce the same effect.

In the following extract a more palpable fallacy of this kind is committed. It is argued that the fanaticism of Mohammedans is due to the fact that they are a race of prohibitionists:—

"I speak for the great majority of thinking, earnest men—the average citizens—for law-makers, scientists, and physicians, when I assert that humanity will develop by exercise of the will in the future as in the past, and that it will not develop through coercion or confession of failure. A vast majority of all the successful men, and of all successful nations in the world, are moderate drinkers of light wines or beers. And it is a fact that in those countries where such light wines or beers are drunk exclusively there is little or no drunkenness—much less than in those which spasmodically, and by legal coercion, aim at absolute prohibition. . . . Germany, Great Britain, and our own country do not lag behind in the world's competition. Among Mohammedans, the Turks especially, we can study the effects of legal prohibition. It seemed wise to their prophet to substitute an iron law for the human will. What figure do the Mohammedans cut in the world to-day? They are a race of prohibitionists, and we hear of them only by reports of outrages, fanatical murders, and massacres that come to us from time to time, or from tragedies in their harems where women are slaves. Has prohibition, with them, meant moral uplift?"[15]

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15. Gustave Pabst: *Cosmopolitan Magazine*, April, 1908.

This fallacious method of arguing is ridiculed in the following paragraphs:—

"There appeared recently an impressive book which demonstrated, from history, that every great nation of antiquity was ruined by cross-breeding. In Chaldea, Egypt, Greece, and Rome, intermarriage with alien races was practiced, and every one of those empires went to pot.

"The facts being indisputable, the conclusion is inevitable; and this country might have hastened to save itself by prohibitive immigration laws, but just a few days later appeared another book, which demonstrated, from history, that free trade is the inevitable cause of national ruin. Carthage, Rome and Venice admitted foreign goods, and everybody knows what became of them.

"This is the historical method, by which you can prove that the fall of Rome was due to wealth, poverty, drink, thirst, slavery, popular suffrage, small families, large families, circuses, malaria, or to the fact that Latin was taught in the primary grades. It is as easy to prove one as another, and each is as convincing as the rest.

"Certain relatively unimportant facts—as that Rome fell—are fairly well established. Of certain individuals we know something—always with a wide opportunity for difference of opinion as to whether Nero was a fine old Roman gentleman, Richard III. a most benevolent character, and Henry VIII. a model family man. But of the great mass of movements, in which is comprised the real evolutions of society, nobody knows anything exactly."

In the following extract from an article by Tyndall on Spontaneous Generation, an account is given of experiments

which show that material antecedents were overlooked by the advocates of "heterogenesis," or the spontaneous generation of low forms of life by the mere action of heat. The argument in favor of spontaneous generation is first stated and then refuted by the citation of examples or experiments.

"Within ten minutes' walk of a little cottage which I have recently built in the Alps, there is a small lake, fed by the melted snows of the upper mountains. During the early weeks of summer no trace of life is to be discerned in this water; but invariably towards the end of July, or the beginning of August, swarms of tailed organisms are seen enjoying the sun's warmth along the shallow margins of the lake, and rushing with audible patter into deeper water at the approach of danger. The origin of this periodic crowd of living things is by no means obvious. For years I have never noticed in the lake either an adult frog, or the smallest fragment of frog-spawn; so that were I not otherwise informed, I should have found the conclusion of Mathiole a natural one, namely, that tadpoles are generated in lake mud by the vivifying action of the sun.

"The checks which experience alone can furnish being absent, the spontaneous generation of creatures quite as high as the frog in the scale of being was assumed for ages to be a fact. Here, as elsewhere, the dominant mind of Aristotle stamped its notions on the world at large. For nearly twenty centuries after him, men found no difficulty in believing in cases of spontaneous generation which would now be rejected as monstrous by the most fanatical supporter of the doctrine. Shell-fish of all kinds were considered to be without parental origin. Eels were supposed to spring spon-

taneously from the fat ooze of the Nile. Caterpillars were the spontaneous products of the leaves on which they fed; while winged insects, serpents, rats and mice were all thought capable of being generated without sexual intervention. The most copious source of this life without an ancestry was putrifying flesh; and, lacking the checks imposed by fuller investigation, the conclusion that flesh possesses and exerts this generative power is a natural one. I well remember when a child of ten or twelve seeing a joint of imperfectly salted beef cut into, and coils of maggots laid bare within the mass. Without a moment's hesitation, I jumped to the conclusion that these maggots had been spontaneously generated in the meat. I had no knowledge which could qualify or oppose this conclusion and for the time it was irresistible. The childhood of the individual typifies that of the race, and the belief here enunciated was that of the world for nearly two thousand years.

"To the examination of this very point the celebrated Francesco Redi addressed himself in 1668. He had seen the maggots of putrifying flesh, and reflected on their possible origin. But he was not content with mere reflection, nor with the theoretic guess-work which his predecessors had founded upon their imperfect observations. Watching meat during its passage from freshness to decay, prior to the appearance of maggots, he invariably observed flies buzzing around the meat and frequently lighting on it. The maggots he thought, might be the half-developed progeny of these flies.

"Placing fresh meat in a jar and covering the mouth with paper, he found that, though the meat putrified in the

ordinary way, it never bred maggots, while the same meat placed in open jars soon swarmed with these organisms. For the paper cover he then substituted fine gauze, through which the odor of the meat could rise. Over it the flies buzzed, and on it they laid their eggs, but, the meshes being too small to permit the eggs to fall through, no maggots were generated in the meat. They were, on the contrary, hatched upon the gauze."

An assertion that one thing is the sole cause of a given effect, may be disproved by showing (1) that the effect appears in the absence of the alleged cause, or (2) that the effect fails to appear when the alleged cause is present and that no counteracting cause is operating.[16]

In an argument from Example to prove a general proposition, the Reason, when fully expressed, asserts not only the truth of the examples cited, but also that no negative instance has been found, and that the search has been exhaustive. The Reason may be disproved (1) by showing an exception, or (2) by showing that the search has not been exhaustive. Errors in this form of reasoning arise from ignoring or overlooking possible exceptions, and the fallacy hence resulting is commonly called generalizing from insufficient particulars. The following extract from Macaulay refers to an example of this fallacy:

"The obstinate and imperious nature of the King (James II.) gave advantages to those who advised him to be firm, to yield nothing, and to make himself feared. One state maxim had taken possession of his small understanding,

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16. Chap. IV., Sec. I.

and was not to be dislodged by reason. To reason, indeed, he was not in the habit of attending. His mode of arguing, if it is to be so called, was one not uncommon among dull and stubborn persons, who are accustomed to be surrounded by their inferiors. He asserted a proposition; and as often as wiser people ventured respectfully to show that it was erroneous, he asserted it again, in exactly the same words, and conceived that, by doing so, he at once disposed of all objection. 'I will make no concession,' he often repeated, 'My father made concessions, and he was beheaded.' Even if it had been true that concession had been fatal to Charles the First, a man of sense would have remembered that a single experiment is not sufficient to establish a general rule even in sciences much less complicated than the science of government; that, since the beginning of the world, no two political experiments were ever made of which all the conditions were exactly alike; and that the only way to learn civil prudence from history is to examine and compare an immense number of cases."

(b) *In Arguments from Analogy.*

The Reason in an argument from Analogy when fully expressed asserts: (1) that two things are alike in all, or a preponderating number of essential particulars, and that a certain proposition is true of one of the two things; and the thesis asserts that that proposition is also true of the other.

The Reason may be disproved and the argument refuted by showing (1) that the two things compared are not alike in the alleged particulars, (2) that the two things differ in a

greater number of other essential particulars; (3) by showing that in essential particulars it is unknown whether the two things agree or differ.

In the following extract from a speech of Henry J. Raymond, an argument from Analogy is refuted by showing an essential point of difference between the things compared.

"But the gentleman from Pennsylvania (Mr. Stevens) insists that they (the Confederate States) did secede, and that this fact is not in the least affected by the other fact that the Constitution forbids secession. He says that the law forbids murder, but that murders are nevertheless committed. But there is no analogy between the two cases. If secession had been accomplished, if these States had gone out, and overcome the armies that tried to prevent their going out, then the prohibition of the Constitution could not have altered the fact. In the case of murder, the man is killed, and the murder is thus committed in spite of the law. The fact of killing is essential to the committal of the crime; and the fact of going out is essential to secession. But in this case there were no such facts."

The following extract contains a refutation of an argument from analogy by setting out in detail essential differences between the things compared:

"It is customary to compare present-day conditions in Russia with those that existed in France in 1789. In many ways the similarity is striking There is the same misery among the people, the same dissatisfaction with an autocratic form of government, the same protest against the venality of a pensioned class. It is not strange the prediction has been made that unless the Czar yields, St. Petersburg

and Moscow are to run a gamut of revolutions like unto that of Paris.

"Yet to form a proper estimate of what is likely to happen in Russia it is profitable to dwell on dissimilarities as well as similarities. In most important respects there are differences, the effect of which is to strengthen the central government. France in 1789 had no railways by which the monarch could rush troops to put down incipient trouble. It had no telegraph by which communication was instant. The standing army was small in number and doubtful in quality. Modern weapons, by which a maximum of slaughter can be effected in a minimum of time, were not invented. Such arms as existed were in the hands of the people or obtainable by them. The autocratic government had not been instructed by a hundred years of experience in how to suppress popular insurrection. Throughout France, the parliaments and practical self-governing municipalities, which had survived the rise of the kingly power, were the nuclei of popular organization. Soft, flabby, and ineffective was the government of 1789 compared with the closely knit one of Russia to-day. Moreover, it was a deficit, bringing the French court well nigh to indigence, after the collapse of the public credit, which compelled Louis to summon the states-general. If he had had the $600,000,000 in gold now in the control of the Czar it is doubtful if the Bastile would have been taken.

"With such vital difference in conditions, all of them making for the strength of the central government, it is improbable that Russia will see such a revolution as did France. The only thing which would give it a chance

would be the general disloyalty of the army. Recruited for the most part from the ignorant rural moujik class, there is yet no evidence that revolutionary ideas prevail in the Russian army. Until it is leavened by the new ideas, revolution is seemingly so hopeless that it will hardly be attempted. The most the urban population of Russia can hope to accomplish by their agitation is to worry the Czar into concessions. Nicholas is known not to be strong, he is believed to be not without goodness of intention. With such a monarch the Liberals of Russia consider, and seemingly rightly, that more can be accomplished by petitions, by peaceable demonstrations, demands in firm, respectful language, and other moral means than by abortive civil war. They are wise enough to see that it is vastly more difficult to wrest power forcibly from an autocrat than it was 125 years ago."

The following passage from Macaulay contains a further example of the refutation of an argument from Analogy:—

"'If,' they say, 'free competition is a good thing in trade, it must surely be a good thing in education. The supply of other commodities, sugar, for example, is left to adjust itself to the demand; and the consequence is that we are better supplied with sugar than if the Government undertook to supply us. Why, then, should we doubt that the supply of instruction will, without intervention of the Government, be found equal to the demand?'

"Never was there a more false analogy. Whether a man is well supplied with sugar is a matter which concerns himself alone. But whether he is well supplied with instruction is a matter which concerns his neighbors and the

State. If he cannot afford to pay for sugar he must go without sugar. But it is by no means fit that, because he cannot afford to pay for education, he should go without education. Between the rich and their instructors there may, as Adam Smith says, be free trade. The supply of music masters and Italian masters may be left to adjust itself to the demand. But what is to become of the millions who are too poor to procure without assistance the services of a decent schoolmaster?"

The following is a further example in which an argument based on similarity of relations is refuted:—

"The Chinese profess to found their government on the paternal principle, and to justify their peculiar form of despotism on the similarity of the state to the family. The argument is not inductive; there is a failure in essential points. There is a certain similarity, namely, the fact of government, involving authority, superiority, and punishment; and any inferences drawn upon this single circumstance would be valid. Certain of the merits and demerits of government are identical in both instances; the graduation of punishment to offence, consistency and fairness on the part of the ruler to the ruled, are equally required in the family and the state. But it is not an inductive inference to say that because the parent is despotical so should the state. The two cases do not agree in the point whence the despotical relation flows; in the family the subjects of government are children; in the state, the subjects are grown men, on a level with the rulers. The inference would require the case of a very ignorant and degraded community ruled by a wise and high-minded caste. To whatever

degree a nation approximates to this state of things, there is an identity between it and the family relationship."[17]

The following argument is a refutation of a false analogy arising from the ambiguity of the word "law":—

"The Dean of Clogher's argument concerning the forgiveness of sin is vitiated by the writer's failure to distinguish between the two radically different meanings of the word 'law.' He says that sin against God can from one point of view be regarded as 'a breach of His moral law analogous to a violation of physical law.' 'We know for certain,' he asserts, 'that there is no such thing as forgiveness of an offence committed against physical law,' and that 'the only way to escape from the ruthless penalty exacted by physical law is to obey it scrupulously and implicitly,' and he contends that 'the moral law works out the dreadful consequences of sin with the same persistency as the physical law.'

"The whole argument is based on analogy, on the supposed similarity of moral law to physical. But the analogy is an entirely false one. The word 'law' is ambiguous in meaning. Between so-called physical law and moral law there is scarcely anything in common. On the one hand, a so-called physical law, such as the law of gravitation, the law of chemical affinity, is a mere general statement, in the indicative mood, concerning observed phenomena. It is addressed to the intellect. The law of gravitation, for example, runs thus: Every particle of matter in the universe attracts every other particle with a

17. Bain: *Logic, Deductive and Inductive*, p. 371.

force whose direction is that of the straight line joining the two, and whose magnitude is proportional directly to the product of their masses, and inversely as the square of their mutual distance. This 'law' did not exist till Newton formulated it. It was by him derived inductively from observations. It is liable at any moment to be proved to be false by further observations. All other physical laws are in the same case. They are simply scientific generalizations, nothing more than provisional hypotheses. Dr. Alexander Hill, from the side of the naturalist, expressed this fact when he says: 'A law is nothing more than a docket into which we collect phenomena which have something in common.' From the side of the jurist Professor Erskine Holland reaffirms it when he defines the term 'law,' as used in the theoretical sciences, as 'the abstract idea of the observed relations of phenomena,' and adds that it is employed 'by a mere metaphor to express' their method and order.

"A moral law, on the other hand, is a command; it is uttered in the imperative mood; it is addressed not to the intellect but to the will. What is there in common between the authoritative injunction, 'Thou shalt not kill,' and the dynamical theorem, 'Action and reaction are equal and opposite'? Yet the one is a typical moral law; the other is a typical physical law. The Dean of Clogher seems to regard them as of one and the same order!

"If, however, the fundamental difference just pointed out be borne in mind, if the conception be firmly grasped that a physical law is only a provisional hypothesis, it will be seen how misleading, or rather how utterly meaningless,

are such expressions as 'a violation of physical law,' and 'an offence committed against physical law,' and 'the ruthless penalty exacted by physical law.' A 'violation of'—a more or less probable general statement; an 'offence committed against'—a doubtfully valid scientific proposition; the 'ruthless penalty exacted by'—a temporarily convenient docket!

"The Dean of Clogher may say that all this is a mere logomachy—a battle of words, not affecting essential issues. He may contend that when he speaks of invariable physical law he simply means the inevitable operation of physical forces. His illustrations suggest that he had this in his mind. He speaks of the water that drowns, of the dynamite that blasts, of the fire that consumes—all of them, totally unaffected by the moral qualities of their victims, all of them passing from cause to effect with remorseless and unfailing certainty. He is, of course, on perfectly safe scientific ground if he is merely restating the familiar truth that, so far as our experience goes, the forces of nature act at all times and under all circumstances with unvarying uniformity. But if this is all that he states and means, what becomes of his analogical argument from physical law ('which gives no indication of any forgiveness of the slightest breach of its enactments') to moral law? If a person who cannot swim jumps into deep water, he is violating not a physical law but the dictates of common sense; if he inadvertently tumbles in, he is the victim not of a 'ruthless penalty' but of an unfortunate accident. If a person who can swim gets into the same water, if he has his clothes on, he will experience an uncomfortable wetting; if he is undressed,

he will (we may hope) enjoy a refreshing bath. The forces of nature, most happily, are not capricious; their operations are determinable. This fact renders it possible for man, on the one hand, to discover and formulate an increasing number of valuable generalizations or 'laws,' and on the other hand, to play off the forces of nature one against the other in the service of the race.

"But the Dean of Clogher wishes us to believe that in the moral sphere the breach of a command is followed by its penalty with the same inevitable certainty as in the physical sphere a cause is followed by its effect. He gives two groups of examples, neither of which, however, supports his contention. First he instances the cases of the drunkard and the libertine: "man addicts himself to a strong drink, and thereby ruins his health . . . He repents of his sin and prays to God for forgiveness, but a doctor whom he consults tells him that his internal diseases, brought on by drink, are incurable'; and again, 'Another gratifies his propensities to immorality,' and 'his subsequent repentance and reform are utterly powerless to undo the evil which he has wrought.' Does not the Dean see that in dealing with the inevitable physical consequences of drunkenness and immorality he is still dealing with purely physical phenomena, with the unvarying sequence of cause and effect in the natural world? It is quite beside the point that the taking of large quantities of strong drink has been in modern times—mainly because of a recognition of its injurious physical effects—condemned by morality. These physical effects were the same before morality took cognizance of them, that is, before drunken-

ness was made a moral offence. They are the same too in the cases of the non-moral monkeys and apes who have been known to fall victims of inebriety. In short, the physical consequences of intemperance and immorality can in no sense be regarded as penalties incurred by the breach of moral law. They existed anterior to moral law, and were probably the primary cause of its promulgation. They continue to exist wholly apart from it.

"The second of the Dean's illustrations of the inevitability of the penalty of the breach of moral law is as unfortunately chosen as the first. 'The magistrate sitting on the bench,' it runs, 'has no power to forgive and let off any prisoner who is brought before him and convicted of crime. The law must take its course, and all know that it is essential to the safety of the community that it should be so.' Now the first and most obvious remark to make about this extraordinary statement is that it is notoriously untrue to fact. Even the magistrates sitting in petty sessions have wide discretionary powers in minor cases; and if the term magistrate be taken (as it must if the argument is to be valid) to include not only subordinate officials, but also the supreme judicial authority of the realm, it is untrue in any case of crime whatsoever. The King, though the proper channels, can freely pardon every offender. The law need not in any single case 'take its course.' The second remark which may be ventured is that the Dean himself admits that his statement is not true to fact. In an amazing passage—which, let us hope, is as little in accord with reality as the one with which it conflicts—he says: 'In an ordinary trial at the court of petty sessions, if a clergyman appears to say a word

for a poor person who has been indicted, and offers to pay his fine, a very great change is felt to have taken place in court as regards the prisoner.' If a word from the lips of a clergyman will modify the course of justice, the course of justice must surely be something very different from the course of nature. It is, indeed, very different,—as different as moral law is from physical law. But since that is the case the whole of Dean's argument falls to the ground."[18]

The following extract contains a series of arguments from Analogy which the student is recommended to examine, and determine how far, if at all, the differences between the things compared render the arguments fallacious.

"The Christian Scientist feels that the Creator has provided a science which only awaits discovery by the individual in order to become as practical in solving his life problems as the science of mathematics is practical to the mathematician in solving his problems.

"The science of mathematics has its fundamental law from which all is derived, upon which all depends, and which includes the all of mathematics. The Science of Mind has its principle, the one originating Mind, our God, from whom man is derived; upon whom man depends; and who includes all that really exists.

"Because the Christian Scientist regards man as an idea of Mind just as the mathematician regards numbers as ideas of mind, he holds that what is true philosophy in dealing with the problems of mathematics is true philosophy in dealing with the problems of man. In mathematics, certain prob-

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18. F. J. C. Hearnshaw: *Hibbert Journal.*

lems present themselves, and certain fixed and invariable rules prevail for their solution. The mathematician, in working out his problem, when he fails of the correct answer has an exact method of procedure. He finds the mistake and corrects the error through the right understanding of the truth. Likewise the musician has a scientific method for restoring harmony when he finds discord. He knows the truth and the truth makes him free from the discord. The mistakes in the mathematical problem are made apparent by misplaced figures. For these mistakes the figures are not held responsible. To correct the mistakes, the human mind which made them must be corrected. Free mortal mind from mistakes and the problem will be free from mistakes.

"What is true science in arithmetic, Christian Science holds to be true science in the human problem. The error is made apparent by an imperfect human figure. For this mistake the body should not be held responsible, for the body is but the instrument of the mind. Free human mind from its error and the human body will be free from its diseases. To remedy the error of disease then, the Christian Scientist, like the mathemetician, does not treat the figure, but rather he treats the metal condition that produced the disease. He regards the disease as due to the absence of Mind—Divine Mind. To him sickness and sin are signs of mindlessness. Christ Jesus, then, announced the fundamental fact in the science of mind when he declared, 'Ye shall know the truth and the truth shall make you free.'

"As Christian Science has a scientific treatment for disease it has also a scientific treatment for sin. In this Science of Mind, as darkness is the absence of light, so sin

is the absence of good or God. As light is the reality and darkness its absence so good is the reality and sin its absence. As darkness is not the child of light, but vanishes before the light, so sin is not the product of Mind but is destroyed by the advent of Mind.

"To heal sin, then, it cannot be scientific to regard it as something real and genuine. If God made it, it would be eternal, and man could not destroy it. God is good and all that He made is like Himself, hence evil is but the absence of what is real, and this perception of the truth is the sunlight from the divine Mind which destroys the supposed presence of evil. In harmony with which it is written, 'To this end was the Son of God manifested, that he might destroy the works of the devil.' The believer in the Science of Mind, therefore, asks with good reason, if disease comes from a mental cause? He affirms that as it is a false condition of mind which produces disease, that the right condition of mind will heal disease.

"There can be no question that disease is always an effect. In itself it is not a cause. It is an unhealthy conclusion from unhealthy premises. According to the accepted rules of logic, the method in such a case would be to treat the premises. If the premises are right, the conclusion will be right. An unhealthy body is the bad conclusion resulting from an unhealthy mind. According to Christian Science it is logical as well as theological to give health to the mind. With this premise right there follows as a logical conclusion, a healthy body. According to good reasoning, you change an effect by changing the cause which produces the effect. Certainly that system would violate every rule of philosophy

which undertook to alter an effect by entirely neglecting the cause and treating only the effect.

"Christian Science, then, is certainly right when it heals sickness by healing the mental cause which produced the sickness. You clarify the stream when you clarify the fountain which is the source of the stream."[19]

(c) *In Arguments from Cause to Effect.*

In an argument from Cause to Effect the reason when expressed in full asserts, (1) the actual or possible existence of some fact or circumstance; (2) that such fact or circumstance is an adequate cause of the effect in question, and (3) that no other agency is operating or will operate to prevent the effect. The argument may be refuted by disproving any one of these assertions. The reason as commonly expressed contains only the first assertion, the others being implied and taken for granted. The most prolific source of fallacy in this argument lies in overlooking the operation of counteracting causes. Predictions are notoriously falsified by the event, and the fault in the reasoning lies, not so much in the inadequacy of the cause, as in the unforeseen agency of counteracting causes. There are two principal objections that may be made to the reason in an argument from Cause to Effect.

First, the fact alleged as a cause is not, or has not been proved to be, an adequate cause of the effect in question, as when it is argued that a wound will be cured by applying

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19. Rev. Irving C. Tomlinson, Mrs. Mary Baker G. Eddy's Secretary: *Metropolitan Magazine*, June, 1908.

salve to the weapon which inflicted it, or that an unfavorable wind will cease to blow if sacrifices be offered to the god of the winds, or that a disease will be cured by taking a particular nostrum or following some course of treatment. This fallacy is sometimes called *non causa pro causa*, alleging something to be a cause which has no part in producing the effect.

Secondly, there are, or it has not been shown that there are not, counteracting causes that will prevent the effect in question, as when it is argued that lowering the rate of duty will cause a fall in price; or that an increase in the rate of wages will cause increased cost of living, or that an increase in rent will cause a decrease in profits.

(d) *In Arguments from Effect to Cause.*

The assumptions which underlie an argument from Effect to Cause are, that the fact in question is known to be an adequate cause of the effect observed, and that it is the sole cause of the effect, or that no other cause was operating to produce it. These assumptions are usually unexpressed, but they are relied on and required to give validity to the argument. Thus, when we argue that the temperature is below 32 degrees, because ice is forming, we wish it to be implied that such a temperature is an adequate cause, and the sole cause of the formation of ice. When we argue that it has rained because the streets are wet, we wish it to be implied that rain is an adequate cause of wet streets, and that no other cause was operating in this case. The argument may be refuted by disproving the fact

expressed as a reason or one of the facts implied. In the argument from Cause to Effect, the principal danger lies in overlooking counteracting causes; in the argument from Effect to Cause, it lies in overlooking plurality of causes.

In the simple forms of the argument from Effect to Cause there is less danger of being deceived than in the more complicated arguments from Testimony and from Circumstantial Evidence.

(e) *In Arguments from Testimony.*

In an argument from Testimony it is argued that an assertion is true because a witness testified to its truth. The Reason expressed is usually the least important part of the argument. The assumptions underlying the argument are that the witness observed the fact testified to, that his memory is accurate, and that his testimony is an accurate transcript of his memory; or, in other words, it is assumed that the witness is trustworthy.

The reason may be disproved and the argument refuted by showing that the witness is not trustworthy; as, for example, that he lacked the means or opportunity for accurately observing the facts testified to, that his memory is defective, that his testimony is inconsistent with itself or with other facts better known or better established, or that he is biased by interest or hostility. The cross-examination of a witness in a court of justice is mainly directed to showing that in one or more material particulars he is untrustworthy:—

(1) That he is dishonest and invented his testimony in whole or in part;

(2) That he is consciously or unconsciously biased by interest or other motives into giving his testimony a false color, or,

(3) That even if he is honest and has an apparent intention to tell the truth, his memory of the facts in question is not to be relied on.

(1) A dishonest witness may be discredited by internal and external marks; by an examination of the testimony, and showing that it is inconsistent with itself or with facts better known or better established; or by his manner of giving evidence. The outward marks of insincerity and untruthfulness in a witness are mainly as follows:—

(a) An over-forward zeal in giving testimony in favor of one party.

(b) Hesitation, reluctance, or evasion in giving answers unfavorable to one party.

(c) Unwillingness to give circumstances in detail where he might be contradicted by other witnesses.

(d) Minuteness of detail in matters in which he knows that contradiction is impossible.

On the other hand, an open frank manner, promptness in answering questions regardless of consequences, willingness to detail circumstances in which he might be contradicted by other witnesses, are signs of an honest witness.

(2) The second source of error in testimony is a conscious or unconscious bias arising from interest, prejudice, or other motives whereby testimony is given a false color. The tendency of most witnesses is to take sides in a controversy and to be influenced by their desire to see their view of the controversy prevail. Their loyalty to a person, party, or cause is often stronger than their loyalty to truth.

Errors often proceed from the vanity of the witness, from his tendency to magnify the importance of his testimony, to make a good story by appealing to the curiosity or wonder of his listeners, and hence to exaggerate or supply details. This may be observed even in the testimony of witnesses under oath, often in the narratives of the historian, and more commonly in newspaper reports and travellers' tales.

Another source of error lies in the witness's tendency to substitute inference for fact. The witness being predisposed in favor of a conclusion which he thinks is warranted by what he observed, often testifies to the reality of occurrences which he arrives at, not by an effort of memory, but by a process of reasoning. He infers that they must have taken place because they are necessary to establish his preconceived conclusion. Mill says: "In proportion to any person's deficiency of knowledge and mental cultivation, is generally his inability to discriminate between his inferences and the perceptions on which they are grounded. Many a marvellous tale, many a scandalous anecdote, owes its origin to this incapacity. The narrator relates not what he saw or heard, but the impression which he derived from what he saw or heard, but of which perhaps the greater part consisted of inference, though the whole is related not as inference but as matter of fact. The difficulty of inducing witnesses to restrain within any moderate limits the intermixture of their inferences with the narrative of their perceptions is well known to experienced cross-examiners."

(3) The greatest source of error in testimony lies in

a defective memory. Witnesses are especially liable (a) to confuse two different impressions and to transpose the order of things and the sequence of events; (b) to have their attention unduly attracted by special parts or incidents and so diverted from other parts; and hence where they have no distinct recollection, to invent details which seem to them probable, rather than say 'I don't remember.'

The following passage from an article by Prof. Claparede, Director of the Psychological Laboratory at the University of Geneva, contains an account of experiments made to test the accuracy of testimony of honest disinterested witnesses, and illustrates these tendencies to error.

"Witnesses may be classed in two groups—good witnesses, loyal, impartial, and disinterested persons; and bad witnesses, who comprise all the various categories of liars.

"Liars we need not stop to discuss. Any evidence they may give it is certain is of no value whatever; upon that point there can be no disagreement. An inquiry, however, which is more interesting, and, above all, more useful, is to ask ourselves whether evidence given by men of good faith really deserves the confidence with which it is usually accepted, and which is expressly accorded to it by the Codes of every country. The only thing the law seeks to do is to stimulate the good faith of witnesses, by means of the oath, on the one hand, and, on the other, by the imposition of very heavy penalties for perjury.

"Now, it is sufficient to pay attention to the conversations in which we take part every day to discover that the worth of evidence depends to a very small degree on the

good faith or the moral value of the witness. Who is there who has not seen for himself to what an extent accounts of the same fact may differ, even when related by serious witnesses endeavoring to scrupulously keep to the truth?

"Nothing, indeed, is more difficult than to tell the truth; that is to say, to recount the past, to make a deposition upon some fact, even if the fact be one which has come a great number of times under our own eyes.

"Researches have been taken up in Germany and much extended by Stern, the well-known psychologist of Breslau, who sought by experimenting to find an answer to the question: Up to what point is the evidence of a healthy individual of good faith to be relied upon?"

"Stern's method consists of putting before a person during a longer or shorter period—thirty seconds, for example—a picture of some scene, and then asking the person to describe the picture from memory. Such experiments have given most curious results. Not only does the witness forget a great number of details, he also falsifies a number of others; and this to such an extent that Stern has formulated the law which every other experimenter has confirmed: 'Absolutely exact evidence is not the rule, but the exception.'

"What is curious and deserves great attention is the fact that the subject of an experiment often relates incorrect facts with extraordinary precision and perfect assurance. Thus, if a witness be asked to swear on oath to the accuracy of his story, we discover often, to our stupefaction, that he is perfectly ready to swear to details which have never existed but in his imagination, and which have no sort of connection with the picture. A young lady of twenty years

of age, for example, who has been shown a photograph of a well-known picture of Becchi, representing an old man feeding a child, swore most positively five months later that the old man in the picture 'was feeding a pigeon,' and that 'another pigeon was getting ready to fly down to take part in the feast.' In the picture there is no trace whatever of a pigeon. Here we perceive that the oath, however much it may enhance the value of evidence in the eyes of the law, may be very far indeed from having any real value.

"If, however, in a long deposition we compare the fidelity of the evidence given on oath with that of the evidence not given on oath, we find that the former is relatively more accurate than the latter. Mlle. Borst, who had shown pictures to twenty-four persons in accordance with Stern's method, tried to find out with what degree of accuracy each answer was made. She remarked that there are three possible degrees in the certainty of an answer. It may be given with hesitation, with assurance, or it may be certified under oath.

"It is interesting to ask which of our recollections are the most exact. Are those given with hesitation, with assurance, or under oath? We would naturally expect to find the last named alone merited entire belief. In reality, however, the difference between these three classes, especially between the last two, is not so great as one might suppose. Out of a hundred replies given under oath, ninety-two were found to be correct; out of a hundred replies given with assurance, eighty-six; out of a hundred uncertain replies, fifty-six. In other words, the degree of fidelity of a hesitating witness may be put down as 56 per

cent.; of a confident witness, 86 per cent.; of a sworn witness, 92 per cent.

"It would be impossible here to give in detail all these experiments, which may be varied in a thousand different ways. We might, for instance, seek to discover whether spontaneous depositions are more reliable than depositions, obtained by questioning; whether the evidence of a woman is more faithful than that of a man; whether educated persons are more to be relied upon than ignorant, adults than children, and so on.

"All these experiments carried out in a laboratory, however, have one serious defect: they display evidence too favorably, and that for the reason that the conditions of everyday life are not completely fulfilled. When a witness is called upon to make a deposition about some event at which he was present, it must be remembered that he was unaware at the time of the occurrence that it was to become on some further occasion the subject of a deposition on his part. In all these laboratory experiments, on the contrary, the witness knows in advance that he is to be called upon to make a deposition about the picture he looks at; he therefore regards the picture with very great attention, and fixes its details as carefully as he can in his memory. The results given by laboratory experiments are thus far better than would be the case with ordinary evidence tendered in a court of justice.

"Remembering this, I endeavoured experimentally to gather some evidence about an occurrence in which the unforeseen conditions characterizing real evidence would be present. I set about it as follows: One day, during a lesson

which I was giving at the University of Geneva, I distributed to my auditors, suddenly and without letting anybody know what I had in my mind, some sheets of white paper, asking them to reply on the spot to about a score of questions relating to the University buildings, which all present knew well.

"Is there an inside window opening upon the corridor of the University, as you enter on the left, facing the window of the porter's lodge?

"How many columns are there in the vestibule of the University?

"How many busts are there on the first floor of the University? etc.

"In this way I obtained fifty-four answers (forty-one from men, thirteen from women). The results were exceedingly bad; not a single person gave evidence that was perfectly correct. Here are the results: the average fidelity of the male witnesses 30 per cent.; of female, 23 per cent. We perceive that such evidence is not nearly so good as that obtained when the pictures were examined by witnesses who knew they were to be afterwards questioned on the subject.

"The most interesting part of the experiment is the question concerning the window. It is a window of very large dimensions, before which the students pass every day. It lights the director's reception-room. In spite of all these favorable circumstances, the very existence of the window was denied by forty-four witnesses. Eight declared the window existed, and two only declared, 'I do not know.'

"A result such as this is very instructive. It shows us, in the first place, how great is the confidence each of us places in his own memory; when we have no recollection of

an object about which we are questioned we are inclined to deny the existence of that object rather than question the faithfulness of our memory. Rather than say 'I do not know' we are ready to deny.

"Another and most disconcerting result is that the value is by no means proportionate to the number of witnesses, as is generally considered to be the case. If, for instance, historians for one reason or another were called upon to appraise the value of the evidence concerning this particular window, they would not fail to conclude that the window had no existence, since forty-four witnesses against eight affirmed that this was so; and yet what a mistake they would be making!

"The experiment, therefore, shows us that a small minority may be right against a very strong majority, and, consequently, that the value of evidence cannot be appraised by basing oneself on a mathematical probability. The act of giving evidence is the result of some function of the brain, and it is the empirical knowledge of this function, far more than a calculation of probabilities, that will permit us to appraise the true worth of any collective deposition. What, then, is the psychological reason why this window gave rise to such false testimony? It may be explained, I believe, by the very slight interest it offered. Though the window is by no means a small one, it plays really no part, and, so far as the students are concerned, is of no use. It is always kept closed, and the panes are of ground glass, so that the curiosity of the ordinary passer-by is in no way aroused even by the temptation to look through it.

"We thus easily perceive why evidence offered in a court

of justice is often so defective. In the majority of cases witnesses are questioned about facts which have no interest for them whatever, however much interest they may have for the true administration of justice.

"It is evident, then, that evidence given by a man who really desires to tell the truth is far from meriting absolute belief. The point on which it is necessary to insist the most is that in practice the danger of evidence is not due to what is *forgotten* but to what is *transformed*. The witness who declares 'I do not know' is not dangerous; but the witness is dangerous who asserts that which is not, and dangerous to the utmost degree.

"The whole interest of the problem is then to be found in the last named phenomenon. Why does a witness affirm as a fact that which is not true? Why is it that fantastic images arise in the mind,—images which answer to nothing actually existing, but which so impose themselves upon our consciences that we take them to be real memories?

"They appear to have two probable origins—*association of ideas* and *suggestion*. The tendency of every idea and every image is to evoke those ideas and those images which are usually in connection with it. When we have to recount an event, the circumstances of which we cannot quite recollect, the lapses in our memory are automatically filled up by images which we borrow from other events, more or less analogous. Thus, in the examples cited above, the probability is that the person who declared that there were two pigeons in the photograph of the picture shown to her had on some previous occasion seen a somewhat similar picture in which there were pigeons.

"As regards the second factor—suggestion; this consists of the introduction of an image in the mind of one individual by another individual. In the giving of evidence suggestion plays a most important part. The simple fact of questioning a witness, of pressing him to answer, enormously increases the risk of errors in his evidence. The form of the question also influences the value of the reply that is made to it.

"Let us suppose, for instance, that some persons are questioned about the color of a certain dog. The replies are likely to be much more correct if we ask the witnesses, 'What is the color of the dog?' than if we were to say to them, 'Was the dog white, or was it brown?' The question will be positively suggestive if we ask, 'Was the dog white?' To such a question the answer is probably of no value. In questioning witnesses—that is to say, in pressing them and forcing their memory—we may obtain, it is true a much more extensive deposition than if we leave them free to answer spontaneously. Any advantage thus obtained, however, is problematical, since we lose in fidelity whatever we may gain in extent of information.

"We may conclude from all that precedes that those engaged in taking evidence must not forget that memory has no resemblance to a safe with impenetrable sides in which our recollections remain carefully shut up. On the contrary, the impression which falls into our mind far more resembles the seed hidden away in the earth; it puts out roots and produces leaves and flowers. And it may happen that before long, no trace can be found of the primitive seed which gave birth to all this vegetation."

(f) *In Arguments from Circumstantial Evidence.*

In an argument from Circumstantial Evidence the Reason when fully expressed asserts the truth of certain facts, and that these facts cannot be explained or accounted for in any reasonable way except on the supposition that the thesis is true. The argument may be refuted, (1) by disproving the facts, (2) by showing that, even if the facts are true, they may be otherwise explained or accounted for; the so-called "theory of the defence" in a criminal trial is usually a thesis by which the incriminating facts may be explained consistently with the prisoner's innocence; or (3) by pointing out relevant facts which are inconsistent with the truth of the thesis and which the thesis fails to explain.

"It has been said that circumstances are inflexible proofs. They will not bend to the inclinations of parties. Witnesses may be mistaken, may be corrupted; things can be neither, and therefore, so far as they go, deserve unlimited, unreserved faith. Circumstances, says Paley, cannot lie. It is astonishing that sophisms like these should have passed current without animadversion. The circumstances are assumed to be in every case established beyond the possibility of mistake; and it is implied that a circumstance established to be true possesses some mysterious force of its own, special in its nature and essence. Now, a circumstance is neither more nor less than a minor fact, and it may be admitted of all facts that they cannot lie; for a fact cannot at the same time exist and not exist: so that, in truth, the doctrine is merely the expression of a truism, that a fact is a fact. It may also be admitted that circumstances are inflexible proofs, but assuredly of nothing more than of their

own existence: so that this assertion is only a repetition of the same truism in different terms. It also seems to have been overlooked, that circumstances and facts of every kind must be proved by human testimony; that although circumstances cannot lie, the narrators of them may; that, like witnesses of all other facts, they may be biased or mistaken, and that the facts, even if indisputably true, may lead to erroneous inference."[20]

In the following passage is set forth the incriminating circumstances relied on to prove that an accused person was guilty of murder, and also the explanation of those circumstances by which his innocence was established.

"A German named Franz was indicted for the murder of Martha Halliday. Deceased was the caretaker of Kingswood Rectory, four miles from Reigate. On Monday, the 10th of June, 1861, she was left alone in the house after 6 p.m. Next morning she was found dead on the floor of her bedroom in her night-dress. Death was caused by suffocation, a stocking having been thrust into her mouth apparently as a gag. Her hands and feet had been tied with a peculiar cord. No property was missing, the thieves having probably been disturbed. Footprints showed that two men had made several attempts to get into the house, finally entering by the window of the deceased's bedroom. Near the body was found a packet of papers consisting of certificates of birth and baptism, and a passport, all belonging to the prisoner, and containing his personal description; also a begging letter signed Adolphe Krohn, a letter

20. Wills: *Circumstantial Evidence*, p. 35.

from Mlle. Tietjens, the singer, and a list of addresses. In the room was found a rough stick broken off a tree. Early in July the prisoner was arrested in London, where he was passing under a false name. Evidence was given for the prosecution to the following effect: About noon on Sunday, the 9th of June, two foreigners took lodgings at the Cricketers, at Reigate. On Monday, the 10th of June, they purchased a ball of cord of peculiar make, the same as that with which the deceased woman had been bound. Another piece of the same kind was found tied round a shirt left by the prisoner at his London lodgings when he was arrested. This cord was so unusual that it could not be matched except at the Reigate shop and at the maker's. Various persons identified the prisoner more or less positively as one of the two foreigners at Reigate. He was the taller and fairer, the other was short and dark. At 4 p.m. on Monday, the 10th of June, the foreigners left the Cricketers. Later that day they were seen going from Reigate towards Kingswood; about 7 p.m. two men who spoke a foreign language were seen a mile from Kingswood Rectory under a beech-tree, which corresponded with the broken stick found. At about the same time two foreigners were seen going from the beech-tree towards the Rectory, but the witness who met them declared that he had seen the same two men at an hour on Sunday afternoon when the Reigate foreigners were undoubtedly at the Cricketers.

"No evidence of an alibi was forthcoming, though the prisoner professed to have been in London at the date of the murder. The story he told the police on the 8th of July was as follows: He had landed at Hull and set out to walk

to London. On the way he had fallen in with two compatriots, one of whom was named Adolphe Krohn, the other William Gerstenberg, who was about prisoner's height and color, and who kept importuning him to give him papers of identification. Prisoner refused, but one night, while he was asleep, the other two went off with his bag, containing his papers and a suit of clothes like those he was wearing. The papers included those found at Kingswood, and also a testimonial and certificate of confirmation. On arriving in London he learned from the newspapers that he was accused of murder, and in alarm changed his name. In support of this story it was proved by independent evidence that on the 9th of July a tramp brought to a local J.P. the testimonial and certificate mentioned by the prisoner, with his diary from his landing in Hull till he lost his bag. They were picked up in Northamptonshire. It was also shown that he had arrived in Hull with a bag, but had none when apprehended. Mlle. Tietjens had given her letter to a German calling himself Adolphe Krohn, who resembled the prisoner but was not the same man. Prisoner stated that the piece of cord with which his shirt was tied up was picked up by him near his lodgings in Whitechapel. This was close to the factory where it was made, and other cord like it was picked up at the same spot by a witness called for the defence. The prisoner was acquitted."[21]

Before a thesis can be said to be proved by circumstantial evidence, it must be capable of explaining or accounting

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21. Wills: *Circumstantial Evidence*, p. 252.

for all the relevant facts that may be brought forward. The reason may therefore be disproved by pointing out relevant facts which the thesis fails to explain, or which are inconsistent with its truth.

The following extract contains a refutation of the argument advanced to prove that Bacon wrote the plays commonly attributed to Shakespeare, by citing well-known facts which that thesis fails to explain:—

"The plays of Shakespeare were universally ascribed to him by his contemporaries; many of them were published during his lifetime with his name upon the title page as the author; all were collected and published together by Heminge and Condell, two of his fellow actors, seven years after his death; and for more than two centuries nobody dreamed of looking for a different authorship or of associating the plays with Bacon.

"But there are questions which even this ingenious hypothesis fails to answer. Why should Bacon have taken the time to write thirty-seven plays, two poems, and one hundred and fifty-four sonnets, if they were never to be known as his works? Not for money, surely, for that grasping Shakespeare seems to have got the money as well as the fame; Bacon died a poor man. His principal aim in life was to construct a new system of philosophy; on this noble undertaking he spent such time as he could save from the exactions of his public career as member of Parliament, Chancery lawyer, Solicitor-General, Attorney-General, Lord Chancellor; and he died with his work far from finished. The volumes which he left behind him were only fragments of the mighty structure which he had planned. We may

well ask where did this overburdened writer find the time for doing work of another kind voluminous enough to fill a life-time, and what motive had he for doing it without recompense in either fame or money?

"Bacon was in a high degree a subjective writer from whom you are perpetually getting revelations of his idiosyncrasies and moods, whereas, of all writers in the world, Shakespeare is the most completely objective, the most absorbed in the work of Creation. In the one writer you are always reminded of the man Bacon; in the other, the personality is never thrust into sight. Bacon is highly self-conscious; from Shakespeare self-consciousness is absent.

"The contrast is equally great in respect of humor. I would not deny that Bacon relished a joke, or could perpetrate a pun; but the bubbling, seething, frolicsome, irrepressible drollery of Shakespeare is something quite foreign to him. Read his essays and you get charming English, wide knowledge, deep thought, keen observation, worldly wisdom, good humour, sweet serenity; but exuberant fun is not there. In writing these essays Bacon was following an example set by Montaigne, but, as contrasted with the delicate effervescent humour of the Frenchman, his style seems sober and almost insipid. Only fancy such a man trying to write 'The Merry Wives of Windsor.' "[22]

A given thesis may be disproved as well as proved by an argument from Circumstantial Evidence. In the following example, circumstances are adduced to disprove the

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22. John Fiske: *Century of Science*, p. 389.

charge that Sunderland had conspired to produce the Revolution of 1688:—

"The Jacobites, for obvious reasons, affirmed that the Revolution of 1688 was the result of a plot concerted long before. Sunderland they represented as the chief conspirator. He had, they averred, in pursuance of his great design, incited his too confiding master to dispense with statutes, to create an illegal tribunal, to confiscate freehold property, and to send the fathers of the Established Church to prison. This romance rests on no evidence, and, though it has been repeated down to our time, seems hardly to deserve confutation. No fact is more certain than that Sunderland opposed some of the most imprudent steps which James took, and in particular the prosecution of the Bishops, which really brought on the decisive crisis. But, even if this fact were not established, there would still remain one argument sufficient to decide the controversy. What conceivable motive had Sunderland to wish for a revolution? Under the existing system he was at the height of dignity and prosperity. As President of the Council he took precedence of the whole temporal peerage. As Principal Secretary of State he was the most active and powerful member of the cabinet. He might look forward to a dukedom. He had obtained the garter lately worn by the brilliant and versatile Buckingham, who, having squandered away a princely fortune and a vigorous intellect, had sunk into the grave deserted, condemned, and broken-hearted. Money, which Sunderland valued more than honors, poured in upon him in such abundance that, with ordinary management, he might hope to become, in a few years, one of the

wealthiest subjects in Europe . . . What chance was there that, in a new order of things, a man so deeply implicated in illegal and unpopular acts, a member of the High Commission, a renegade whom the multitude, in places of general resort, pursued with the cry of Popish dog, would be greater and richer? What chance that he would even be able to escape condign punishment?"[23]

23. Macaulay: *History of England*, chapter 9.

SECTION IV.

DISPROOF OF ASSERTED RELATION BETWEEN REASONS AND THESIS.

The two modes of refutation which we have been considering consist in showing the propositions relied on as reasons to be untrue. We come now to the consideration of the third mode of refutation, which consists in showing that the reasons, even if true, do not imply the thesis. In every argument it is by implication asserted that if the reasons are true the thesis must be true. The fallacy of an argument may be shown by disproving this asserted relation, or in other words, by showing that the thesis "does not follow" from the reasons, is not deducible from them, or is not implied by them.

Fallacious arguments of this class occur in almost every controversy, and are used not only by those who design to mislead, but even by honest advocates, who thus impose on themselves as well as on others. If we are deceived by, or make use of, fallacious reasoning of this kind, it arises mainly from two sources: the imperfections of our minds and the ambiguities and other imperfections of language; the want of clear thinking and the want of clear expression.

The late Professor Minto said: "If we were perfectly clear-headed persons, capable of protracted concentration, incapable of bewilderment, always on the alert, never in a hurry, never over-excited, absolutely without prejudice, we should keep our attention fixed on two things while listening to an argument, the point to be proved and the necessary

premises. We should hold the point clearly in our minds, and watch indefatigably for the corroborating propositions. But none of us being capable of all this, all of us being subject to bewilderment by a rapid whirl of statements, and all of us biassed more or less for or against a conclusion, the sophist has facilities for doing two things—taking for granted that he has stated the required premises, and proving to perfect demonstration something which is not the point in dispute, but which we are willing to mistake for it."[24]

We often drift into fallacy by using words in different senses; thus the word "church" may mean a particular building, a particular congregation, a particular denomination, or the aggregate of all Christian people; "man" may mean the individual or the race; "freedom" (of the will) may mean freedom to act or not to act, or freedom to act in accordance with our characters; "law" may mean physical law, moral law, or civil law. And we are often deceived by failure to distinguish these different senses when presented to us in discourse.

The following passage illustrates the fallacious reasoning that may be involved in the use of the word "right" in different senses:

"Speaking morally, you are said to have a right to do a thing if all persons are morally bound not to hinder you from doing it. But, in another sense, to have a right to do a thing is the opposite of having no right to do it, that is, of being under a moral obligation to forbear doing it. In this sense, to say that you have a right to do a thing, means that you may

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24. Minto: *Logic, Inductive and Deductive*, p. 230.

do it without any breach of duty on your part; that other persons not only ought not to hinder you, but have no cause to think worse of you for doing it. This is a perfectly distinct proposition from the preceding. The right which you have by virtue of a duty incumbent on other persons, is obviously quite a different thing from a right consisting of the absence of any duty incumbent upon yourself. Yet the two things are perpetually confounded. Thus, a man will say he has a right to publish his opinions; which may be true in this sense, that it would be a breach of duty in any other person to interfere and prevent the publication: but he assumes thereupon that, in publishing his opinions, he himself violates no duty; which may be either true or false, depending as it does, on his having taken due pains to satisfy himself, first, that the opinions are true, and next, that their publication in this manner, and at this particular juncture, will probably be beneficial to the interests of truth on the whole.

"The second ambiguity is that of confounding a right of any kind with a right to enforce that right by resisting or punishing a violation of it. People will say, for example, that they have a good right to good government, which is undeniably true, it being the moral duty of their governors to govern them well. But in granting this, you are supposed to have admitted their right or liberty to turn out their governors, and perhaps to punish them, for having failed in the performance of this duty; which, far from being the same thing, is by no means universally true, and depends on an immense number of varying circumstances, requiring to be conscientiously weighed before adopting or acting on such

a resolution. This last example is, like others which have been cited, a case of fallacy within a fallacy; it involves not only the second of the two ambiguities pointed out, but the first likewise."[25]

In case of doubt whether a given thesis is contained in the reasons, it is advisable to pick out from the web of discourse, and set forth clearly, the precise proposition which is in dispute and is to be proved, and then to set forth, stripped of surplusage, the proving propositions. If this be done the bearing of the various members of the argument can be easily discerned, and the relation of the thesis to the reasons will become apparent.

Proof, according to Sir William Hamilton, consists in showing out explicitly that an assertion not granted or supposed is implicitly contained in something different which is granted or supposed. An argument is therefore fallacious, (1) if the assertion to be proved is not rested on something different from itself; if the thesis itself is employed as a reason it adds nothing to the proof; or (2) if the assertion to be proved is not implicitly contained in the reasons given. The first class of fallacies includes those called Begging the Question and Arguing in a Circle. The second class include those in which some member of the argument, or the whole argument is irrelevant having regard to the question at issue.

(1) Where the Thesis is employed as a Reason.

(*a*) *Begging the Question.*

The fallacy of "begging the question," or *petitio principii*, consists in attempting to prove a thesis by itself, which in the

25. Mill: *System of Logic*, p. 569.

course of the argument is either covertly assumed to be true, or if expressed as a reason, is disguised in an equivalent form of words. Jevons gives the following example where the thesis is stated as a reason in another form: "Consciousness must be immediate cognition of an object; for I cannot be said really to know a thing unless my mind has been affected by the thing itself."

"The English language," says Whately, 'is perhaps the more suitable for the fallacy of *petitio principii*, from its being formed from two distinct languages, and thus abounding in synonymous expressions which have no resemblance in sound and no connection in etymology; so that a sophist may bring forward a proposition expressed in words of Saxon origin, and give as a reason for it the very same proposition stated in words of Norman origin; e.g., to allow every man unbounded freedom of speech must always be, on the whole, advantageous to the state; for it is highly conducive to the interests of the community that each individual should enjoy a liberty perfectly unlimited of expressing his sentiments."

The following is a further example: "Red has the most exciting effect upon the nerves because it is the most powerful of all colors." A color can be said to be powerful only in so far as it has an exciting effect, and the argument is very much like saying that red is the most exciting color because it is the most exciting color.

"Plato," says Mill, "attempts to prove that things may exist which are incorporeal, by the argument that justice and wisdom must be something. Here, if by something is meant, as Plato did in fact mean, a thing capable of existing in and

by itself, and not as a quality of some other thing, he begs the question in asserting that justice and wisdom must be something; if he means anything else, his conclusion is not proved."[26]

(*b*) *Arguing in a Circle.*

The fallacy of "arguing in a circle" is an involved form of begging the question. It usually consists of a chain of reasoning in which the proposition to be proved is used as a reason, either expressed or implied, in the earlier part of the argument to establish some other proposition which latter is in turn used to establish the thesis. It occurs also when two propositions are each alternately used to prove the other. A fallacy of this kind is outlined in the following extract from a speech by Cobden:

"Now, is it not a matter worthy of consideration how far this insecurity of tenure is bound up with that protective system of which you are so enamored? Suppose it can be shown that there is a vicious circle; that you have made politics of Corn Laws, and that you want voters to maintain them; that you very erroneously think that the Corn Laws are your great mine of wealth, and, therefore, you must have a dependent tenantry that you may have their votes at elections to maintain this law in Parliament. Well if you will have dependent voters, you cannot have men of spirit and capital. Then your policy reacts upon you. If you have not men of skill and capital, you can not have improvements and employment for your laborers. Then comes around that

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26. Mill: *System of Logic*, p. 574.

vicious termination of the circle—you have pauperism, poor-rates, county-rates and the other evils of which you are now speaking and complaining."[27]

In the case of *Ogden* v. *Saunders* the question was whether a law passed by a state legislature was unconstitutional as being in conflict with an article of the constitution of the United States. It was argued for the plaintiff that the parties had reference to the state law because it was a binding law, and then that the state law was binding and valid as between the parties because they had entered into a contract with reference to it, and the law was therefore part of the contract. This fallacy is exposed in the following extract from the argument of Daniel Webster:—

"The law acts upon a contract only when it is broken, but forms no part of the contract itself. If it were true that the law is to be considered as part of the contract, the consequence contended for would not follow; because, if this statute be part of the contract, so is every other legal or constitutional provision existing at the time which affects the contract, or is capable of affecting it; and especially this very article of the constitution of the United States is part of the contract. The plaintiff in error argues in a complete circle. He supposes the parties to have had reference to it because it was a binding law, and yet he proves it to be a binding law only upon the ground that such reference was made to it."[28]

Every attempt to prove the uniformity of nature by an

27. Richard Cobden: *Speech on the Effects of Protection.*

28. Webster: Argument in *Ogden* v. *Saunders*, 12 Wheat. 303.

appeal to general experience involves the fallacy of arguing in a circle, since in every argument by which an attempt is made to prove it, the principle to be proved is surreptitiously or covertly assumed to be true, and is required for the validity of that argument. This is illustrated in the following passage:—

"Consider, for example, the law of causation; one, but by no means the only one, of those general principles of interpretation which, as I am contending, are presupposed in any appeal to general experience, and cannot, therefore, be proved by it. If we endeavor to analyze the reasoning by which we arrive at the conviction that any particular events occurred outside the narrow ring of our immediate perceptions, we shall find that not a step of this process can we take without assuming that the course of nature is uniform; or, if not absolutely uniform, at least sufficiently uniform to allow us to argue with tolerable security from effects to causes, or, if need be, from causes to effects, over great intervals of time and space. The whole of what is called historical evidence is, in its most essential parts, nothing more than an argument or series of arguments of this kind. The fact that mankind have given their testimony to the general uniformity of nature, or, indeed, to anything else, can be established by the aid of that principle itself, and by it alone; so that if we abandon it we are in a moment deprived of all logical access to the outer world, of all cognizance of other minds, of all usufruct of their accumulated knowledge, of all share in the intellectual heritage of the race. While if we cling to it (as, to be sure, we must, whether we like it or not), we can do so only on

condition that we forego every effort to prove it by the aid of general experience; for such a procedure would be nothing less than to compel what is intended to be the conclusion of our argument to figure also among the most important of its premises."[29]

The following passage from Mill contains an example of the fallacy of arguing in a circle as committed by Hobbes and others:—

"One of the most notable specimens of reasoning in a circle is the doctrine of Hobbes, Rousseau and others, which rests the obligations by which human beings are bound as members of society on a supposed social compact. I waive the consideration of the fictitious nature of the compact itself; but when Hobbes, through the whole Leviathan, elaborately deduces the obligation of obeying the sovereign, not from the necessity or utility of doing so, but from a promise supposed to have been made by our ancestors on renouncing savage life and agreeing to establish political society, it is impossible not to retort by the question: Why are we bound to keep a promise made for us by others, or why are we bound to keep a promise at all? No satisfactory ground can be assigned for the obligation, except the mischievous consequences of the absence of faith and mutual confidence among mankind. We are, therefore, brought round to the interests of society as the ultimate ground of the obligation of a promise; and yet those interests are not admitted to be a sufficient justification for the existence of government and law. Without a promise it is

29. Rt. Hon. A. J. Balfour: *Foundations of Belief*, p. 128.

thought that we should not be bound to do that which is implied in all modes of living in society, namely, to yield a general obedience to the laws therein established; and so necessary is the promise deemed, that if none has actually been made some additional safety is supposed to be given to the foundations of society by feigning one."[30]

The following passage contains further examples of this fallacy:—

"One mode of fallac' ,us reasoning represents nature as under incapacities corresponding to those of our intellect; but instead of only asserting that nature can not do a thing because we can not conceive it done, goes the still greater length of averring that nature does a particular thing, on the sole ground that we can see no reason why she should not. Absurd as this seems when so plainly stated, it is a received principle among scientific authorities for demonstrating *à priori* the laws of physical phenomena. A phenomenon must follow a certain law, because we see no reason why it should deviate from that law in one way rather than in another. This is called the Principle of the Sufficient Reason; and by means of it philosophers often flatter themselves that they are able to establish, without any appeal to experience, the most general truths of experimental physics.

"Take, for example, two of the most elementary of all laws, the law of inertia and the first law of motion. A body at rest cannot, it is affirmed, begin to move unless acted upon by some external force; because, if it did, it must either move up or down, forward or backward, and so forth;

30. Mill: *System of Logic*, p. 575.

but if no outward force acts upon it, there can be no reason for its moving up rather than down, or down rather than up, etc.; ergo, it will not move at all.

"This reasoning I conceive to be entirely fallacious. . . . Almost every fallacy may be referred to different genera by different modes of filling up the suppressed steps; and this particular one may, at our option, be brought under *petitio principii*. It supposes that nothing can be a 'sufficient reason' for a body's moving in one particular direction, except some external force. But this is the very thing to be proved. Why not some internal force? Why not the law of the thing's own nature? Since these philosophers think it necessary to prove the law of inertia, they of course do not suppose it to be self-evident; they must, therefore, be of opinion that, previously to all proof, the supposition of a body's moving by internal impulse is an admissible hypothesis; but if so, why is not the hypothesis also admissible that the internal impulse acts naturally in some one particular direction, not in another? If spontaneous motion might have been the law of matter, why not spontaneous motion toward the sun, toward the earth, or toward the zenith? Why not, as the ancients supposed, toward a particular place in the universe, appropriated to each particular kind of substance? Surely it is not allowable to say that spontaneity of motion is credible in itself, but not credible if supposed to take place in any determinate direction.

"So, again, of the first law of motion; that a body once moving will, if left to itself, continue to move uniformly in a straight line. An attempt is made to prove this law

by saying that if not, the body must deviate either to the right or to the left, and there is no reason why it should do one more than the other. But who could know, antecedently to experience, whether there was a reason or not? Might it not be the nature of bodies, or of some particular bodies, to deviate toward the right, or if the supposition is preferred, toward the east or south? It was long thought that bodies, terrestrial ones at least, had a natural tendency to deflect downward; and there is no shadow of anything objectionable in the supposition, except that it is not true. The pretended proof of the law of motion is even more manifestly untenable than that of the law of inertia, for it is flagrantly inconsistent; it assumes that the continuance of motion in the direction first taken is more natural than deviation either to the right or to the left, but denies that one of these can possibly be more natural than the other. All these fancies of the possibility of knowing what is natural or not natural, by any other means than experience, are in truth entirely futile. The real and only proof of the laws of motion, or of any other law of the universe, is experience; it is simply that no other suppositions explain or are consistent with the facts of universal nature."[31]

(2) Where some member of the Argument is Irrelevant.

(*a*) *Irrelevant Conclusion.*

The fallacy of Irrelevant Conclusion usually arises from mistake as to the exact point to be proved. It is committed

31. Mill: *System of Logic*, p. 528.

when the advocate proves only part of the question in dispute, under the mistaken impression that he has proved the whole of it, or in the hope that what he has proved will be taken for the whole, as, for example, when the assertion to be proved is: "There is a benevolent God," and the reasons advanced only show that "there is a God."

The fallacy of proving only part of the question often occurs where the thesis is a complex proposition embracing several distinct facts, as, for example: "The prisoner, being a witness in a judicial proceeding, made a statement under oath which he knew to be false," and the evidence proves only that he made a false statement, without showing that he knew it to be false, or that it was made under oath, or that it was made in a judicial proceeding.

The fallacy is also committed when the question proved is not the question in dispute or even part of it, but one more or less resembling it, and is mistaken for the real issue by the advocate, or is intended by him to be mistaken for it by those addressed. Mr. W. H. Mallock, in his *Reconstruction of Belief*, gives the following example of a fallacy of this kind, where the conclusion proved is verbally like the question in dispute, but is really different, the word freedom (of the will) being used ambiguously in two or more senses:—

"Of all the arts of the conjuror, or the man who plays tricks with cards, the most important is that of distracting the spectator's attention, and by fixing it on operations which have nothing to do with the performance, makes him fancy that one thing has happened, when what has really happened is another thing. In the same way the practitioners of the

method now referred to engage to defend or demonstrate certain religious doctrines, for which in the course of the argument they substitute something else, and persuade themselves and others that the substitute is the genuine article. . .

"Let us consider it as applied to the task of rendering credible the moral freedom of man. Here we have, to use our previous simile, a trick played not with two cards but with three. What those who play it set out to prove is that, whenever a man sins, and consequently deserves hell-fire, he is just as free not to sin as to sin. But the word 'free' is used in two other senses besides this—namely, as meaning that the man is free from the physical constraint of others, and also as meaning that he is free from any constraint whatever except what is imposed on him by his own temperament or character. The first connotes the freedom—the distinguishing kind of freedom—which the apologist of religion pledges himself and endeavors to vindicate; but what he does is to shuffle all three freedoms together,—ostentatiously to make light of the second, ostentatiously to defend the third, and then, by a further shuffle, to pretend that he has proved the first.

"This remarkable feat is being performed over and over again by apologists at the present day, bad, good and indifferent. One example of it, which shall be taken from a distinguished source, will be enough for us. It occurs in an essay which Professor Lloyd Morgan—a cultivated and careful thinker, and head of a well-known college—has written in answer to the determinism of Professor Haeckel. 'You may at first,' he says, summing up his previous argu-

ments, 'find some difficulty in reconciling human responsibility with the determinism demanded by science. But on what does the determinism of science rest? Surely on observed uniformity. On what does it rest in the field of conduct? Surely on the uniform activity of a given character. Just in so far as my character forms a coherent system, just in so far as my freedom lies in the absence of determination by anything outside myself, can you hold me, that is my character, responsible for its acts.

"Now here, no doubt, we have freedom of a certain kind; but it is not the kind that the would-be believer wants. Granting that we are free in a sense, because our characters determine our actions, he wants to be assured that we are free because we determine our characters. But this is precisely the doctrine that Professor Lloyd Morgan suppresses, because it is inconsistent with the determinism demanded by science. Let us suppose that Professor Lloyd Morgan dismisses two butlers in succession—one for breaking the teacups because he is half-blind; the other for stealing the teaspoons, because he is disposed to do so. It is obvious that the Professor, whilst dismissing, would excuse, and not blame the former, because his breakages, though not determined by anything outside himself, were due to characteristics in himself which had been determined for him by his birth and circumstances. He is, therefore, professionally, but not morally, blamable. But if butler number two, when caught in the act of theft, were to excuse himself by saying, 'I stole because my character is a coherent system, and the propensity to steal has been ingrained in me from my earliest childhood,' would the Professor think the excuse

valid? According to his own principles, he is certainly bound to do so; for the determinism demanded by science will allow of no single moment, from the time when the butler was a foetus to the moment of his detected theft, when his character was not, just like the other butler's blindness, determined by the constitution which he inherited, and the circumstances in which his fate enclosed him. We can only say that, if the excuse of the thief is valid, nothing is inexcusable, or rather nothing requires excusing; moral responsibility, as distinct from legal or professional, is a dream; and the value of a freedom which means no more than this, that we are free to act in accordance with our own characters, may be farther seen by reflecting on the equally obvious proposition that nobody is ever free to do anything else."[32]

The following passage contains a further example of this fallacy due to ambiguity of language:

"The mercantile public," says Mill, "are frequently led into this fallacy by the phrase 'scarcity of money.' In the language of commerce, 'money' has two meanings: currency, or the circulating medium; and capital seeking investment, especially investment on loan. In this last sense the word is used when the 'money market' is spoken of, and when the 'value of money' is said to be high or low, the rate of interest being meant. The consequences of this ambiguity is that as soon as scarcity of money in the latter of these senses begins to be felt—as soon as there is difficulty of obtaining loans, and the rate of interest is high—it is con-

32. W. H. Mallock: *Reconstruction of Belief*, p. 214.

cluded that this must arise from causes acting upon the quantity of money in the other and more popular sense; that the circulating medium must have diminished in quantity, or ought to be increased. I am aware that, independently of the double meaning of the term, there are in the facts themselves some peculiarities, giving an apparent support to this error; but the ambiguity of the language stands on the very threshold of the subject, and intercepts all attempts to throw light upon it."[33]

The fallacy is often committed in reply to an argument, as for example, when our opponent by way of answer elaborately disproves a proposition which we never asserted, or proves a proposition which we never denied, under the mistaken notion that we had asserted or denied such proposition, and built our whole case upon it. This process is sometimes called "setting a man up only to knock him down," and is made clear in the following passage:

"Malthus has been supposed to be refuted if it could be shown that in some countries or ages population has been nearly stationary; as if he had asserted that population always increases in a given ratio, or had not expressly declared that it increases only in so far as it is not restrained by prudence, or kept down by poverty and disease. Or, perhaps, a collection of facts is produced to prove that in some one country the people are better off with a dense population than they are in another country with a thin one; or that the people have become more numerous and better off at the same time. As if the assertion were that a

33. Mill: *System of Logic*, p. 564.

dense population could not possibly be well off; as if it were not part of the very doctrine and essential to it, that where there is a more abundant production there may be greater population without any increase of poverty, or even with a diminution of it."[34]

"It is evident," says Whately, "that this fallacy may be employed as well for the apparent refutation of your opponent's proposition, as for the apparent establishment of your own; for it is substantially the same thing to prove what was not denied or to disprove what was not asserted. The latter practice is not the less common, and it is more offensive, because it frequently amounts to a personal affront, in attributing to a person opinions, etc., which he perhaps holds in abhorrence. Thus, when in a discussion one party vindicates, on the ground of general expediency, a particular instance of resistance to government in a case of intolerable oppression, the opponent may gravely maintain, that we ought not to do evil that good may come; a proposition which of course had never been denied, the point in dispute being whether resistence in this particular case were doing evil or not. Or again, by way of disproving the assertion of the right of private judgment in religion, one may hear a grave argument to prove that it is impossible that every one can be right in his judgment."[35]

The fallacy called "the fallacy of objections" is a further instance of mistaking the question in issue. The objector supposes that he has answered you if he has urged one or more

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34. Mill: *System of Logic*, p. 577.

35. Whately: *Elements of Logi* p. 234.

strong objections to your proposal, the question being, not whether there are objections, but whether those urged against it outweigh the reasons in favor of it.

"The fallacy of objections," says Whately, "is also the stronghold of bigoted anti-innovators, who oppose all reforms and alterations indiscriminately; for there never was, or will be, any plan executed or proposed, against which strong and even unanswerable objections may not be urged; so that unless the opposite objections be set in the balance on the other side, we can never advance a step. E.g.: The defenders of the transportation system—a system which, as an eminent writer has observed, was 'begun in defiance of all reason, and persevered in, in defiance of all experience,'—are accustomed to ask 'what kind of secondary punishment would you substitute?' and if any one is suggested, they adduce the objections, and difficulties, real and apparent, to which it is exposed, if another is proposed, they proceed in the same manner and so on without end. For of all the other plans of secondary punishment that have ever been tried, or imagined, the best must be open to some objections, though the very worst is much less objectionable than transportation. 'There are objections,' said Dr. Johnson, 'against a plenum, and objections against a vacuum; but one of them must be true.'"[36]

The fallacy is often committed in cases where, instead of disproving an assertion made or a reason given, our opponent disproves the converse of that assertion or reason; as, for example, where an assertion is made that "supreme poets

36. Whately: *Logic*, p. 240.

arise only in times of great national activity," and the objector attempts to disprove it by citing instances of great national activity where no supreme poet appeared, as if the assertion made were that "in times of great national activity supreme poets always arise."

Nearly related to this fallacy is the practice called "shifting ground." When it is shown that the whole of the proposition in question has not been proved, or when part of it has been disproved, the advocate who at first maintained that proposition takes refuge in claiming that some part of it has been proved. Thus, suppose A maintains that "a certain person was arrested for stealing"; when it is shown that the person was not arrested, A shifts ground and claims, "Well, he was charged with stealing," and when that is disproved, still further recedes and claims, "At all events, he was charged with some criminal offence," and when that is disproved, he takes up another position and says, "Well, he appeared in Court to answer some charge, for I was there and saw him."

"It will readily be perceived," says Whately, "that nothing is less conducive to the success of the fallacy in question than to state clearly, in the outset, either the proposition you are about to prove, or that which you ought to prove. It answers best to begin with the premises, and to introduce a pretty long chain of argument before you arrive at the conclusion. The careless hearer takes for granted, at the beginning, that this chain will lead to the conclusion required; and by the time you are come to the end he is ready to take for granted that the conclusion which you draw is the one required; his idea of the question having

gradually become indistinct. This fallacy is greatly aided by the common practice of suppressing the conclusion, and leaving it to be supplied by the hearer, who is, of course, less likely to perceive whether it be really that 'which was to be proved,' than if it were distinctly stated. The practice, therefore, is at best suspicious; and it is better in general to avoid it, and to give and require a distinct statement of the conclusion intended."[37]

The fallacy of Irrelevant Conclusion is sometimes called "arguing beside the point." If the advocate who employs it is aware that the question he is attempting to prove is not the question in dispute, but intends those addressed to mistake it for the question in dispute, he is said to be "evading the issue," or "dodging the question."

(*b*) *Irrelevant Reason.*

When this fallacy is committed there is usually no confusion or mistake as to the question to be proved, the error lying in supposing there is some connection between the reason given and the thesis, when in reality there is little or no connection and the reason is therefore irrelevant. It often occurs where there is no evidence to prove the thesis, and the advocate in his extremity is thus tempted to catch at any straw that has a faint appearance of support; as, for example, where a prisoner is charged with obtaining money by false pretences, and it is argued that he must be guilty because "he is a dangerous man, he drinks and gambles, and is thoroughly unscrupulous; he is a notorious

37. Whately: *Logic*, p. 244.

swindler, and would not hesitate to commit any crime to attain his ends."

Conversely, when there is no real evidence to disprove a charge, irrelevant facts are often advanced as reasons in the nature of extenuating circumstances. This form of fallacy is illustrated in the following passage from Macaulay, which refers to the defences usually made on behalf of Charles I.:—

"We charge him with having broken his coronation oath; and we are told that he kept his marriage vow. We accuse him of having given up his people to the merciless inflictions of the most hot-headed of prelates; and the defence is, that he took his little son on his knees and kissed him. We censure him for having violated the articles of the Petition of Rights, after having, for good and valuable consideration, promised to observe them; and we are informed that he was accustomed to hear prayers at six o'clock in the morning."

In the following passage Mill cites an example of a fallacy which consists of an irrelevant reason, and arises out of the ambiguity in the use of the word "infinite":—

"The ambiguity of the word infinite is the real fallacy in the amusing logical puzzle of Achilles and the Tortoise, a puzzle which has been too hard for the ingenuity and patience of many philosophers, and which no less a thinker than Sir William Hamilton considered as insoluble; as a sound argument, though leading to a palpable falsehood. The fallacy, as Hobbes hinted, lies in the tacit assumption that whatever is infinitely divisible is infinite; but the following solution (to the invention of which I have no claim) is more precise and satisfactory.

"The argument is, let Achilles run ten times as fast as the tortoise, yet if the tortoise has the start, Achilles will never overtake him. For suppose them to be separated by an interval of a thousand feet; when Achilles has run these thousand feet, the tortoise will have got on a hundred; when Achilles has run those hundred, the tortoise will have run ten, and so on forever; therefore Achilles may run forever without overtaking the tortoise.

"Now the 'forever,' in the conclusion, means for any length of time that can be supposed; but in the premises, 'forever' does not mean any length of time; it means any number of subdivisions of time. It means that we may divide a thousand feet by ten, and that quotient again by ten, and so on as often as we please; that there never needs to be an end to the subdivisions of distance, nor consequently to those of the time in which it is performed. But an unlimited number of subdivisions may be made of that which is itself limited. The argument proves no other infinity than of duration that may be embraced within five minutes. As long as the five minutes are not expired, what remains of them may be divided by ten, and again by ten, as often as we like, which is perfectly compatible with there being only five minutes altogether. It proves, in short, that to pass through this finite space requires a time which is infinitely divisible, but not an infinite time; the confounding of which distinction Hobbes had already seen to be the gist of the fallacy."[38]

In courts of law, evidence may be rejected as irrelevant

38. Mill: *System of Logic*, p. 559.

on one of two grounds: 1st, because the connection between the principal and evidentiary facts is too remote and conjectural; 2nd, because it is excluded by the pleadings; that is, because it has no bearing on the fact to be proved.

"But whether a given fact, bearing indirectly on a matter in issue, should be received as circumstantial or rejected as conjectural evidence, is often a question of extreme difficulty. One test, perhaps, is to consider whether any imaginable number of pieces of evidence such as that tendered could be made the ground of decision; for it is the property of a chain of genuine circumstantial evidence that, however inconclusive each link is in itself, the concurrence of all the links may amount to proof, often of the most convincing kind. Suppose, in case of murder by a cutting instrument, no eye-witness being forthcoming, the criminative facts against the accused were: (1) He had had a quarrel with the deceased a short time previous; (2) he had been heard to declare that he would be revenged on the deceased; (3) a few days before the murder the accused bought a large knife or sword, which was found near the corpse; (4) shortly after the murder he was seen at a short distance from the spot, and coming away from it; (5) marks corresponding with the impression made by his shoes were traceable near the body; (6) blood was found on his person soon after the murder; (7) he absented himself from home immediately after it; (8) he gave inconsistent accounts of where he was on the day it took place. The weakness of any one of these elements, taken singly, is obvious, but collectively they form a strong case against the accused. Now, suppose, instead of the above chain of facts, the

following evidence was offered: (1) The accused was a man of bad character; (2) he belonged to a people notoriously reckless of human life, and addicted to assassination; (3) on a former occasion he narrowly escaped being convicted for the murder of another person; (4) much jealousy and ill-feeling existed between his nation and that to which the deceased belonged; (5) on the same spot, a year before, one of the latter was murdered by one of the former in exactly the same way; (6) the murderer had also robbed the deceased, and the accused was known to be avaricious; (7) he had been heard in his sleep to use language implying that he was the murderer; (8) all his neighbors believed him guilty, or, supposing the case one of public interest, both Houses of Parliament had voted addresses to the Crown in which he was assumed to be the guilty party. These and similar matters, however multiplied, could never generate that rational conviction on which alone it is safe to act, and accordingly not one of them would be received as legal evidence."[39]

The facts which may be proved in a judicial inquiry are (1) facts in issue, (2) facts relevant to the issue, and (3) facts, although not relevant, are by law deemed to be relevant to the issue.

Facts in issue are those facts which are necessary to establish the claim, liability, or defence, forming the subject-matter of the proceedings; and which, either by the pleadings or by implication, are in dispute between the parties.

Facts relevant to the issue are facts which tend directly

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39. Best: *Evidence*, p. 119.

or indirectly to prove or disprove a fact in issue or some relevant fact.

A fact is said to be relevant to another fact when, according to the common course of events, either taken by itself or in conjunction with other facts, it proves or renders probable the past, present or future existence or non-existence of that other fact.[40]

There is a distinction between logical and legal relevancy. Legal relevancy is for the most part based on logical relevancy, or that connection between events which in the ordinary course of experience is found to render one probable or certain from the existence of the other. But many facts that are logically relevant are deemed to be irrelevant. Thus, certain classes of facts—for example, similar occurrences, the character of the parties, hearsay and opinion evidence—which in ordinary life are relied on as rendering other facts probable—that is, logically relevant to them—are (with certain exceptions) rejected by law, as not possessing a sufficient degree of probative force to form the basis of judicial decisions, and they are deemed to be irrelevant. On the other hand, numerous facts are legally probative although they have no logical bearing on the issue, as for example, facts affecting the admissibility of other evidence, which show that a communication is privileged, that a confession was voluntary, that a witness is competent, or sufficiently ill for his deposition to be read, that a document was duly executed or was produced from proper custody.

In an action to recover the price of goods sold to which

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40. Phipson: *Evidence*, p. 39.

the defence was that the sale was subject to a certain condition, evidence to prove that the plaintiff had made contracts with other persons subject to that condition was held to be irrelevant.[41]

The question being whether A obtained or attempted to obtain money in particular instances from B by falsely pretending that he could negotiate marriages; evidence (1) that the general nature of his business as a marriage agent was genuine; and (2) that in other specific cases marriages had been negotiated, is irrelevant.[42]

The question being whether A promised to marry B; letters written by A to B expressing affection and admiration for her but containing no reference to marriage, are inadmissible, since a man might write such consistently with having no intention to marry.[43]

The question being whether A intended to deceive B by pretending to tell his fortune by the stars; evidence that A or others bona fide believed in his ability to tell such fortunes is irrelevant.[44]

On a similar charge as to palmistry, evidence that this was a well-recognized science whose practitioners enjoyed a professional status, and that the defendant practiced it in a genuine manner, was rejected as irrelevant.[45]

In all criminal cases involving punishment as distinguished from penalty, the prisoner is, on grounds of

41. *Hollingham* v. *Head*, 4 C.B.N.S. 388.
42. *R.* v. *Mortimer*, 31 L.J. 180.
43. *May* v. *Kelly*, 31 Ir. L.R. 67.
44. *Penny* v. *Hanson*, 18 Q.B.D. 478.
45. *R.* v. *Stephenson*, 68 J.P. Rep. 524.

humanity, allowed the privilege of proving his good character, either in chief or by cross-examination, for the purpose of raising a presumption of his innocence. The character proved must be the specific kind impeached, e.g., honesty where dishonesty is charged, good character in other respects being irrelevant.

Opinion evidence is in general inadmissible whether delivered on oath or not. The grounds assigned for its rejection are that opinions, in so far as they may be founded on no evidence, or illegal evidence, are worthless, and in so far as they are founded on legal evidence tend to usurp the functions of the tribunal whose province alone it is to draw conclusions of law and fact. The opinions of skilled witnesses, however, are admissible whenever the subject is one upon which competency to form an opinion can only be acquired by a course of special study or experience. An expert may give his opinion upon facts proved either by himself, or by other witnesses in his hearing at the trial, or upon hypotheses based upon the evidence.

(*c*) *Irrelevant Principle.*

This fallacy occurs less frequently than any of the preceding because the principle of an argument is less frequently expressed. If the principle is not expressed an objector is not entitled to supply an irrelevant principle, but he may supply the principle which is required to give validity to the argument, and if that principle is untrue he may disprove it. But it sometimes happens that a principle is expressed or may be gathered from the context, which i

irrelevant and does not support the proposition to be proved, as, for example, when it is argued that "A B is a Republican because he believes in protection; all Republicans believe in protection." The principle required for the validity of this argument is that "all who believe in protection are Republicans," and the principle advanced is therefore irrelevant.

This form of fallacy most frequently arises from the inveterate tendency of the mind to assume that if a general proposition is true its converse is also true, either that the converse is the same thing as the original proposition, or that the one implies the other. Thus, if every A is B, we are apt to conclude that every B is A; or if we believe that all horned animals are ruminant, we are apt to think that all ruminant animals are horned; or if we hold that every form of government which excludes the people from political power is subject to violent revolutions, we are likely to assume that governments which are subject to violent revolutions exclude the great mass of the people from political power.

We may very easily slip into this form of fallacy in dealing with hypothetical propositions. As previously explained a hypothetical proposition is a complex proposition made up of two propositions called antecedent and consequent, so related that the truth of one necessarily follows from the truth of the other. What is meant and implied in a hypothetical proposition is expressed in the law of Antecedent and Consequent:

When two propositions are related as antecedent and consequent, the truth of the consequent follows from the truth of the antecedent, and falsehood of the antecedent

follows from the falsehood of the consequent. This may be illustrated by the following arguments:

Principle: If the water is freezing, the temperature is below 40 degrees;

Reason: The water is freezing;

Thesis: The temperature is below 40 degrees.

Principle: If the water is freezing, the temperature is below 40 degrees;

Reason: The temperature is not below 40 degrees;

Thesis: The water is not freezing.

Besides these two valid arguments that may be rested on the same principle, there are two others which are invalid arising from mistake as to what the principle really implies. These are as follows:

Principle: If the water is freezing the temperature is below 40 degrees;

Reason: The water is not freezing;

Thesis: The temperature is not below 40 degrees.

Principle: If the water is freezing the temperature is below 40 degrees;

Reason: The temperature is below 40 degrees;

Thesis: The water is freezing.

In order to guard against these fallacies, it is necessary to remember what the relation of antecedent and consequent does not imply. First, the truth of the consequent does not imply the truth of the antecedent; thus, the temperature may be below 40 degrees and yet the water may not freeze. Secondly, the falsehood of the antecedent does not

imply the falsehood of the consequent; thus, the fact that the water is not freezing does not imply that the temperature is not below 40 degrees.

The fallacy of *non sequitur* (it does not follow) really includes all the fallacies mentioned in this section, but the name is usually restricted to loosely constructed arguments, where neither the Reason nor the Principle is strictly relevant, and which do not logically support any conclusion. Professor de Morgan cites the following example: Episcopacy is of Scripture origin; the Church of England is the only Episcopal church in England; therefore, the Church established is the Church that should be supported.

3. Where the whole Argument is Irrelevant.

There is another class of arguments often called fallacies which do not involve any mistake as to the proposition to be proved or as to the proving propositions, but which when used unfairly are employed to distract attention from the real issue by raising another, or as it is sometimes called, "drawing a herring across the trail." This class includes those arguments known as *ad hominem*, *ad verecundiam*, *ad captandum*, *tu quoque*, etc.

It is well to observe that these forms are perfectly valid as arguments. But when they are used unfairly, or when their practical effect is to deceive or confuse, they may be regarded as fallacies of "evading the issue," or "dodging the question."

An Argument *ad hominem* is an appeal to the character, principles or former profession of the person against whom it is directed. It is an argument drawn from premises

which, whether true or not, ought to be admitted by the person against whom they are used, either on account of his known principles or beliefs, or because they are necessary to justify his conduct. "Such a conclusion," says Whately, "it is often both allowable and necessary to establish, in order to silence those who will not yield to fair general argument; or to convince those whose weakness and prejudices would not allow them to assign to it its due weight." It is often used to confuse an opponent or discredit him with the audience by showing that what he now maintains is inconsistent with his former professions or practice. The argument *ex concesso*, that is, one based on previous admissions of an opponent, is one form of the argument *ad hominem*.

In the following passage from Macaulay the question was whether Parliament was competent to pass a law to deprive a bishop of his office. The argument advanced by those who wished to prove that it was not, is first stated, followed by an *ad hominem* argument, not to prove that Parliament was competent to pass such a law, but to show that those who argued against it could not fairly do so, because they were compelled to admit the fact that former Parliaments had deprived Bishops of their office and appointed their successors, and that the bishop in question was in fact a successor of those so appointed.

"There were some persons who went so far as to deny that Parliament was competent to pass a law requiring a bishop to swear on pain of deprivation. No earthly power, they said, could break the tie which bound the successors of the apostles to the diocese. What God had joined no man

could sunder. Kings and senates might scrawl words on parchments or impress figures on wax; but those words and figures could no more change the course of the spiritual than the course of the physical world. As the Author of the universe had appointed a certain order, according to which it was His pleasure to send winter and summer, seed-time and harvest, so He had appointed a certain order, according to which He communicated his grace to His Catholic Church; and the latter order was, like the former, independent of the powers and principalities of the world. A legislature might alter the names of the months, might call June, December; but in spite of the legislature, the snow would fall when the sun was in Capricorn, and the flowers would bloom when he was in Cancer. And so the legislature might enact that Ferguson or Muggleton should live in the palace at Lambeth, should sit on the throne of Augustine, should be called your Grace, and should walk in procession before the premier duke; but, in spite of the legislature, Sancroft would, while Sancroft lived, be the only true Archbishop of Canterbury; and the person who should presume to usurp the archiepiscopal functions would be a schismatic. This doctrine was proved by reasons drawn from the budding of Aaron's rod, and from a certain plate which Saint James the Less, according to a legend of the fourth century, used to wear on his forehead. A Greek manuscript, relating to the deprivation of bishops, was discovered about this time in the Bodleian library and became the subject of a furious controversy. One party held that God wonderfully brought this volume to light, for the guidance of His Church at a most critical moment. The other party wondered that any

importance could be attached to the nonsense of a nameless scribbler of the thirteenth century. Much was written about the deprivations of Chrysostom and Photius, of Nicolaus Mysticus and Cosmos Atticus. But the case of Abiathar, whom Solomon put out of the sacerdotal office for treason, was discussed with peculiar eagerness. No small quantity of learning and ingenuity was expended in the attempt to prove that Abiathar, though he wore the ephod and answered by Urim, was not really High Priest. that he ministered only when his superior Zadoc was incapacitated by sickness or by some ceremonial pollution, and that therefore the act of Solomon was not a precedent which would warrant king William in deposing a real bishop.

"But such reasoning as this, though backed by copious citations from the Misna and Maimonides, was not generally satisfactory even to zealous churchmen. For it admitted of one answer, short, but perfectly intelligible to a plain man who knew nothing about Greek fathers or Levitical genealogies. There might be some doubt whether King Solomon had rejected a high priest; but there could be no doubt at all that Queen Elizabeth had ejected the bishops of more than half the sees in England. It was notorious that fourteen prelates had, without any proceeding in any spiritual court been deprived by Act of Parliament for refusing to acknowledge her supremacy. Had that deprivation been null? Had Bonner continued to be, to the end of his life, the only true bishop of London? Had his successor been an usurper? Had Parker and Jewell been schismatics? Had the Convocation of 1562, that Convocation which had finally settled the doctrine of the Church of England, been

itself out of the pale of the Church of Christ? Nothing could be more ludicrous than the distress of those controversialists who had to invent a plea for Elizabeth which should not be also a plea for William."[46]

This form of reply to an opponent is sometimes called "cutting the ground from under his feet."

The *tu quoque* argument which is a form of the argument *ad hominem*, consists in replying to a charge of wrongdoing by a countercharge, or in showing that the accuser had been guilty of similar misconduct; as for example: "Our opponents charge us with maladministration. If there has been 'graft' and jobbery in the conduct of the department, it was made possible by the use of patronage lists; but our opponents, who preceded us in office instituted this system of patronage lists and we only continued their policy."

An argument *ad verecundiam* (reverence) is an appeal to the authority of a great name as concluding the question. If the person appealed to is competent from his learning, researches, experience or position to pronounce upon the question, the argument may be a perfectly valid argument. It becomes fallacious when the person appealed to, however eminent otherwise, is not an authority in the particular matter in dispute, but has a mere semblance of authority from his eminence in other things.

An argument *ad populum* consists of an appeal to the feelings of those addressed, and it becomes fallacious if the appeal is to passion, prejudice or other unworthy feelings, or if its effect is to distract attention from the real question in

46. Macaulay: *History of England*, Chap. xi.

dispute, or to render those addressed less capable of considering the question with an open mind.

The argument *ad captandum* or *ad captandum vulgus* is put forward for the purpose of catching the unthinking crowd, and is often applied to mere clap-trap, glittering generalities, or meretricious attempts to win popular favor or applause.

Bentham in his *Book of Fallacies* distinguishes the following classes: (1) fallacies of Authority, as when in answer to an argument for reform or change an appeal is made to the wisdom of our ancestors who thought otherwise; (2) fallacies of Danger, commonly called the "Hobgoblin" argument, the object of which is to evade discussion by exciting alarm; (3) fallacies of Delay the object of which under various pretexts is to evade discussion by postponing it; (4) fallacies of Confusion, the object of which is by the use of catch-words and vague generalities to cloud the issue and involve the discussion in confusion, so that the real question may be lost sight of.

All these forms of argument when used fallaciously to evade the issue are opposed to the argument *ad rem* which is addressed to the matter in dispute.

CHAPTER XI.

ARRANGEMENT OF ARGUMENTS.

DISCOURSE like music is a successive process. Painting, on the other hand, by means of line, form and color presents a given subject-matter with a multitude of details all at the same time and in one view. The method of discourse is to add word to word, idea to idea, and part to part in a single linear series, the object of which is to enable the mind to construct a mental picture out of what is thus given, and to realize the connections and relations of its parts.

Since the object of argument is conviction, the order in which the different parts of an argument and different arguments are presented, becomes important when we consider that conviction may be effected more easily by one order than by another.

Whately says: "Arrangement is a more important point than is generally supposed; indeed it is not perhaps of less consequence in Composition than in the Military Art; in which it is well known, that with an equality of forces, in numbers, courage, and every other point, the manner in which they are drawn up, so as either to afford mutual support, or, on the other hand, even to impede and annoy each other, may make the difference of victory or defeat.

"A great advantage in this point is possessed by the Speaker over the Writer. The Speaker compels his hearers to consider the several points brought before them, in the

order which he thinks best. Readers on the contrary will sometimes, by dipping into a book, or examining the Table of Contents, light on something so revolting to some prejudice, that though they might have admitted the proofs of it if they had read them in the order designed, they may at once close the book in disgust."

The first question to determine is whether the proposition to be proved should be stated before the proofs are given or the reverse. The general rule is that the proposition to be proved should be stated at the outset, for the obvious reason that the bearing of the facts adduced as evidence can thus be more easily appreciated. If the advocate began with a recital of the evidence, those addressed would be in a state of bewilderment as to whither they were being led, and by the time the conclusion was announced might be unable to recall the facts which were adduced to support it, while if the thesis were set out in the beginning they would be able to perceive the connection of every fact which supported it at the time, and the process of conviction would thus be going on at every step. Everyone knows how tedious it is to listen to a long string of facts without being apprised beforehand what it is all about, what it leads to or without being given some hint of what conclusion they were intended to support. The following is an example from Henry Clay who, in a well-known speech on the American System, sets forth his two main theses before giving reasons to support them. After some words of introduction he says:

"I pass, with pleasure, from this disagreeable topic, to two general propositions which cover the entire ground of debate. The first is, that, under the operation of the

American System, the objects which it protects and fosters are brought to the consumer at cheaper prices than they commanded prior to its introduction, or, than they would command if it did not exist. If that be true, ought not the country to be contented and satisfied with the system, unless the second proposition, which I mean presently also to consider, is unfounded? And that is, that the tendency of the system is to sustain, and that it has upheld, the prices of all our agricultural and other produce, including cotton."

In many cases, of course, the thesis is announced beforehand. Thus, in debating unions the subject of debate is usually published or announced before the speakers are called on; in judicial trials the issue is settled by the pleadings, and in deliberative assemblies the question is put in the form of a resolution before arguments are advanced in favor of or against it. In such cases, even, it is often advisable to re-state the thesis in order to impress the exact issue on the minds of those addressed, especially if the tendency of the discussion is to wander from the text and drag in side issues. Thus, Webster in his speech in reply to Hayne commenced as follows:

"When the mariner has been tossed for many days in thick weather and on an unknown sea, he naturally avails himself of the first pause in the storm, the earliest glance of the sun, to take his latitude and ascertain how far the elements have driven from his true course. Let us imitate this prudence, and before we float further on the waves of debate, refer to the point from which we departed, that we may at least be able to conjecture where we now are. I ask for the reading of the resolution before the Senate."

Sir Alexander Cockburn, in his famous opening at the trial of Palmer, thus re-states the question he sets out to prove at the beginning of his address: "It is for the murder of John Parsons Cook that the prisoner stands indicted to-day, the charge against him being that he took away that man's life by poison."

There are occasions, however, when it is not advisable to state the thesis fully in the beginning. If it is unpopular, or not in accordance with prevailing opinion, it is better not to announce the thesis at first, as it would tend to arouse prejudice or hostility. But even here the audience or the reader should not be left entirely in the dark. Some hint should be given as to the drift of the discussion, if it is only to state the subject in an interrogative form, as, for example: Is lynching ever justifiable? leaving it open in the meantime whether you will argue the affirmative or negative.

There are certain disadvantages in the argumentative method. If a speaker lays down a proposition and sets out to convince his hearers of its truth, he is apt to put them in a critical frame of mind, especially if there is no apparent occasion for arguing, or if there is no speaker on the other side of the question to dispute his assertions. In such cases there is a tendency on the part of listeners to suspend judgment and remain unconvinced until they have heard the other side. In homiletic speaking, therefore, it is better to use the expository method—that is, to state the subject of discussion and set forth the facts, and leave it to those addressed to draw the conclusion for themselves. By following this plan the hearers are made partners, as it were, in the argument, and are more apt to be and remain convinced.

In arguing the truth of a general proposition by means of examples, an argument has more weight if the proposition is announced first and the examples which support it afterwards, than if the reverse order were adopted, for the reason that the hearer's mind is thus enlisted in thinking of similar instances to confirm the conclusion.

The question of the order of the facts which constitute the Reason arises in lengthy arguments, such as arguments from Example and from Circumstantial Evidence. When a number of examples are given, those which are obvious, familiar, near at hand, and recent, should precede those which are more remote. The attention is arrested and the mind is inclined to conviction by those which are familiar and obvious, and conviction is confirmed and curiosity satisfied by reference to those that were not thought of in that light before.

Where the reason consists of a number of facts, as in circumstantial evidence, the chronological order is usually the best. By this arrangement, facts which show antecedent probability, or the existence of causes which tend to produce the effect in question, would be stated first. The mind is thus prepared for conviction, and will more readily accept facts which show that the effect is due to that cause than if the process were reversed. Thus, in criminal trials it is usual to state the facts out of which the motive for committing the crime arose before stating the facts which go to show that the prisoner actually committed it.

The next question to determine is in what order arguments should be presented when more than one argument is employed to prove the same Thesis. Speaking generally,

those arguments which are obvious and near at hand should be stated first, especially if by this course a strong or striking argument can be employed at the beginning and at the end. If you begin with a weak argument you create the impression that you can prove nothing; and if you end with a weak argument you leave the impression that nothing has been proved.

According to Whately: "The arguments which should be placed first in order are, *caeteris paribus*, the most obvious, and such as naturally first occur. This is evidently the natural order; and the adherence to it gives an easy, natural air to the composition. It is seldom, therefore, worth while to depart from it for the sake of beginning with the most powerful arguments (when they happen not to be also the most obvious), or, on the other hand, for the sake of reserving these to the last, and beginning with the weaker; or again, of imitating, as some recommend, Nestor's plan of drawing up troops, placing the best first and last and the weakest in the middle. It will be advisable, however (and by this means you may secure this last advantage), when the strongest arguments naturally occupy the foremost place, to recapitulate in a reverse order; which will destroy the appearance of anti-climax, and is also in itself the most easy and natural mode of recapitulation. Let, e.g., the arguments be A, B, C, D, E, etc., each less weighty than the preceding; then, in recapitulating, proceed from E to D, C, B, concluding with A."

Arguments from Cause to Effect and from Analogy should precede arguments from Testimony and other arguments from Effect to Cause, for the reason that the former

classes of arguments prepare the mind for conviction and incline it to belief by showing the antecedent probability of the fact to be proved.

For a similar reason a deductive argument should precede an inductive argument in establishing a general proposition. A deductive argument, being usually an argument from Cause to Effect, establishes the conclusion as probable, and as what we would naturally expect, while the introduction of examples has the effect of confirming the impression already made by the Deductive Argument.

In like manner an indirect argument should precede a direct argument, as we are more likely to accept the direct proof of a proposition if it has been first shown that all possible alternatives are untenable or that the contradictory of it is unreasonable or absurd. Reverse the order of the following indirect and direct arguments and note the effect.

"In either case, it is very plain that it requires the action of Congress to enable them (the Confederate States) to form a State government and send representatives to Congress. Nobody, I believe, pretends that with their old constitutions and frames of government they can be permitted to claim their old rights under the Constitution. They have torn their constitutional States into atoms, and built on their foundations fabrics of a totally different character. Dead men cannot raise themselves. Dead States cannot restore their own existence 'as it was.' Whose especial duty is it to do it? In whom does the Constitution place the power? Not in the judicial branch of Government, for it only adjudicates and does not prescribe laws. Not in the Executive, for he only executes and cannot make

laws. Not in the Commander-in-Chief of the armies, for he can only hold them under military rule until the sovereign legislative power of the conqueror shall give them law.

"There is fortunately no difficulty in solving the question. There are two provisions in the Constitution, under one of which the case must fall. The fourth article says: 'New States may be admitted by Congress into the Union.' In my judgment this is the controlling provision in this case. Unless the law of nations is a dead letter, the late war between two acknowledged belligerents severed their original compacts, and broke all the ties that bound them together. The future condition of the conquered power depends on the will of the conqueror. They must come in as new States or remain as conquered provinces. Congress—the Senate and House of Representatives, with the concurrence of the President—is the only power that can act in this matter."

In replying to an opponent, the answer to his arguments should not as a general rule occupy either the first or the last place in your argument. Whately says "refutation of objections should generally be placed in the midst of the argument; but nearer the beginning than the end. If, indeed, very strong objections have obtained much currency, or have been just stated by an opponent, so that what is asserted is likely to be regarded as paradoxical, it may be advisable to begin with a refutation; but when this is not the case, the mention of objections in the opening will be likely to give a paradoxical air to our assertion, by implying a consciousness that much may be said against it. If, again, all mention of objections be deferred till the last,

the other arguments will often be listened to with prejudice by those who may suppose us to be overlooking what may be urged on the other side. Sometimes, indeed, it will be difficult to give a satisfactory refutation of the opposed opinions till we have gone through the arguments in support of our own; even in that case, however, it will be better to take some brief notice of them early in the composition, with a promise of afterwards considering them more fully, and refuting them."[1]

The importance attached to the Arrangement of arguments by the two great rival orators of Athens may serve to illustrate and enforce what has been said. "Æschines," says Whately, "strongly urged the judges (in the celebrated contest concerning the Crown) to confine his adversary to the same order, in his reply to the charges brought, which he himself had observed in bringing them forward. Demosthenes, however, was far too skilful to be thus entrapped; and so much importance does he attach to this point that he opens his speech with a most solemn appeal to the judges for an impartial hearing; which implies, he says, not only a rejection of prejudices, but no less also, a permission for each speaker to adopt whatever arrangement he should think fit. And accordingly he proceeds to adopt one very different from that which his antagonist had laid down; for he was no less sensible than his rival that the same arrangement which is the most favorable to one side is likely to be the least favorable to the other."

1. Whately: *Elements of Rhetoric*, p. 177.

CHAPTER XII.

SOME HINTS ON DEBATING.

In setting forth the question in dispute, care should be taken to state it (1) in its simplest form, so that it may be readily understood; (2) unambiguously, so that your opponents cannot argue it in one sense while you intend it to be taken in another; and (3) not wider or more general than is sufficient for your purpose, lest you may not be able to prove it, while in a narrower or more moderate form you might succeed. It is always a disadvantage to begin with a sweeping statement, and, after the discussion has proceeded, to be compelled to amend and confess that the question you stated is more than you can prove. If the thesis contains technical terms, these should be explained; or if it contains a term that may be used in two or more senses, the sense intended should be stated and defined unless it clearly appears by the context. The thesis, moreover, should be distinguished from other assertions with which it is likely to be confused, and should be detached from whatever is extraneous and irrelevant. Consider what misrepresentations might be made of your argument and provide against it. The history of controversial speaking is full of instances where a word, phrase or sentence used by a speaker is, by a slight turn, made to mean something entirely different from, even the exact opposite of, what was intended. Cobden wrote: "My ever-constant and

over-ruling thought while addressing a public meeting, the one necessity which long experience of the arts of controversialists has impressed on my mind, is to avoid the possibility of being misrepresented, and prevent my opponents from raising a false issue."

A young advocate is often tempted on the one hand to argue something that is not in dispute, or to prove something that is already admitted; and on the other hand to endeavor to disprove something that cannot be disproved, to answer an unanswerable argument. Such a proceeding is worse than a waste of time; it does not advance his own cause, while it serves to emphasize the strength of his opponent's.

Stick to the question in dispute; prove what you set out to prove and nothing more; beware of proposing or being drawn into side issues. This most obvious rule of good debating is perhaps the most frequently violated, not only by beginners, but by the most eminent advocates and debaters. John Morley cites Burke as an example of one who frequently turned aside from the direct issue and thus impaired the effect of his magnificent speeches. "Burke," he says, "almost always deserted his subject before he was abandoned by his audience. In the progress of a long discourse he was never satisfied with proving that which was principally in question, or with enforcing the single measure which it was his business and avowed purpose to enforce—he diverged to a thousand collateral topics—he demonstrated as many disputed propositions—he established principles in all directions—he illuminated the whole horizon with his magnificent, but scattered lights. Having too many

points to prove, his auditors in their turn forgot that had undergone the process of conviction upon any."

There is always a temptation in debate to indulge in personalities, to discuss the motives, purposes and characters of the advocates instead of what they advocate, to abuse the plaintiff's attorney instead of demolishing the plaintiff's case, to argue about men rather than measures. Such a course entails many disadvantages: it is never attended with permanent success; the lack of dignity and good taste that it often involves impairs your own authority with those you wish to convince; it distracts their attention from, and tends to obscure, the real issue, and your own arguments, if any, respecting it; and it admits of an obvious and complete answer: If you have no valid argument to advance what becomes of your contention?

The tendency to irrelevancy, which is the source of all or nearly all fallacious reasoning, is deeply rooted in human nature. It is much easier to wander aimlessly than to pursue a straight and steady course; to be diverted by chance suggestion or association into alluring by-paths than to keep to the main high-road; to challenge your opponent, or yield to his challenge, to go into collateral and extraneous questions, than to keep to the real subject of debate. The one piece of advice which Erskine was constantly giving to young advocates was to avoid, as they would the plague, everything, however interesting or important in itself, which had no direct bearing on the question at issue.

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